

THE TECHNOLOGY REVIEW



DECEMBER

1929

technology review

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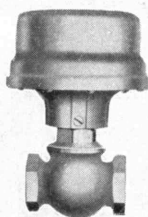


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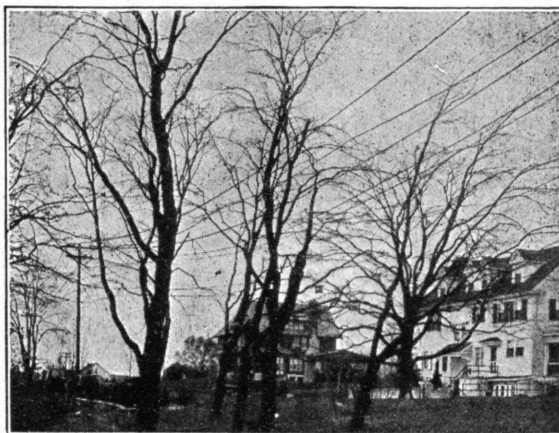
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THE TABULAR VIEW

THOMAS E. TALLMADGE'S ('98) article on the evolution of the skyscraper is an outgrowth of his avocation as historian of American architecture and his vocation as a successful practising architect in Chicago. Mr. Tallmadge is also Professor of Architectural History at the Armour Institute of Technology, sometime lecturer on architectural history at the Chicago Art Institute, and President of the Evanston, Ill., Art Commission. In 1922 Northwestern University conferred upon him an honorary M.A. His "The Story of Architecture in America" was reviewed in *The Review* for April, 1928. ¶ "I want to know," wrote STUART CHASE, '10, in his article last month, "what you engineers are up to, what kind of a joy-ride you are giving this planet on the back of a billion horsepower, and whether the world is a better place to live in since you started the laboratory racket. . . ." Happily *The Review* had access to an unpublished address delivered by Dr. ARTHUR D. LITTLE, '85, as President of the Society of Chemical Industry of Great Britain which anticipated and answered some of the questions which rack Mr. Chase. On page 77 the paper is presented, necessarily truncated by inexorable space limitations, but complete enough to constitute a cogent reply to "A Billion Wild Horses." Dr. Little, one of America's great chemists, needs no introduction. His election last year to the presidency of the Society of Chemical Industry of Great Britain was but another recognition of his great services as scientist, apostle of science, and lucid expositor of the social value of scientific research.

A NUMBER of major American railroads have in recent years turned to electric locomotive power. The reasons that have impelled this and the probability of many other roads following suit, are discussed in "Steam vs. Electricity," on page 79. Its author, DUGALD C. JACKSON, Head of the Department of Electrical Engineering at the Institute, speaks with complete authority. As a member of the Boston firm of Jackson and Moreland (Edward L., '07) he has acted as consultant in the electrification of the Great Northern's Cascade Tunnel Division and of the Delaware and Lackawanna, now under way. ¶ JOHN J. ROWLANDS, who contributed "Science and the Front Page," has been a newspaper man since his Canadian prospecting and surveying days in the Cobalt and Porcupine Mining regions. His first newspaper experience came in 1915 when he joined the staff of the *Springfield Union*. Subsequently, and until he became Director of the Institute's News Service, he was employed by the United Press, first in New York and then in Boston as Manager of the New England Bureau.

JOHN BAKELESS, whose interest in world affairs is equalled by his knowledge of them, is known to *Review* readers by an article entitled "Science and World Affairs" which appeared in *The Review* for April, 1929, in which he pleads for a more scientific study of world affairs in order to handle them more (*Continued on page 70*)

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THE TABULAR VIEW

(Concluded from page 69)

intelligently. Mr. Bakeless's connections with such vital magazines as *The Living Age*, and *The Forum* has served to keep this interest alive and constantly growing to a valuable extent. His two books, "The Economic Causes of Modern War" and "The Origin of the Next War," have been well received and widely read. New York University has benefited by his experience in journalism because, since 1927, he has lectured there on that subject. At the present time Mr. Bakeless is devoting his time to studying, writing and lecturing along these two lines. SETH K. HUMPHREY, '98, whose latest travel book is reviewed on page 94, will be remembered as the author of "Cheerio, Africa!" in *The Review* for March, 1928. It was his original intention to give the book this title rather than the one it bears, "Loafing through Africa," but in the light of the reception met by his "Loafing through the Pacific" (now issued uniform in format with the new African book), it would seem that his final decision was wisely made.

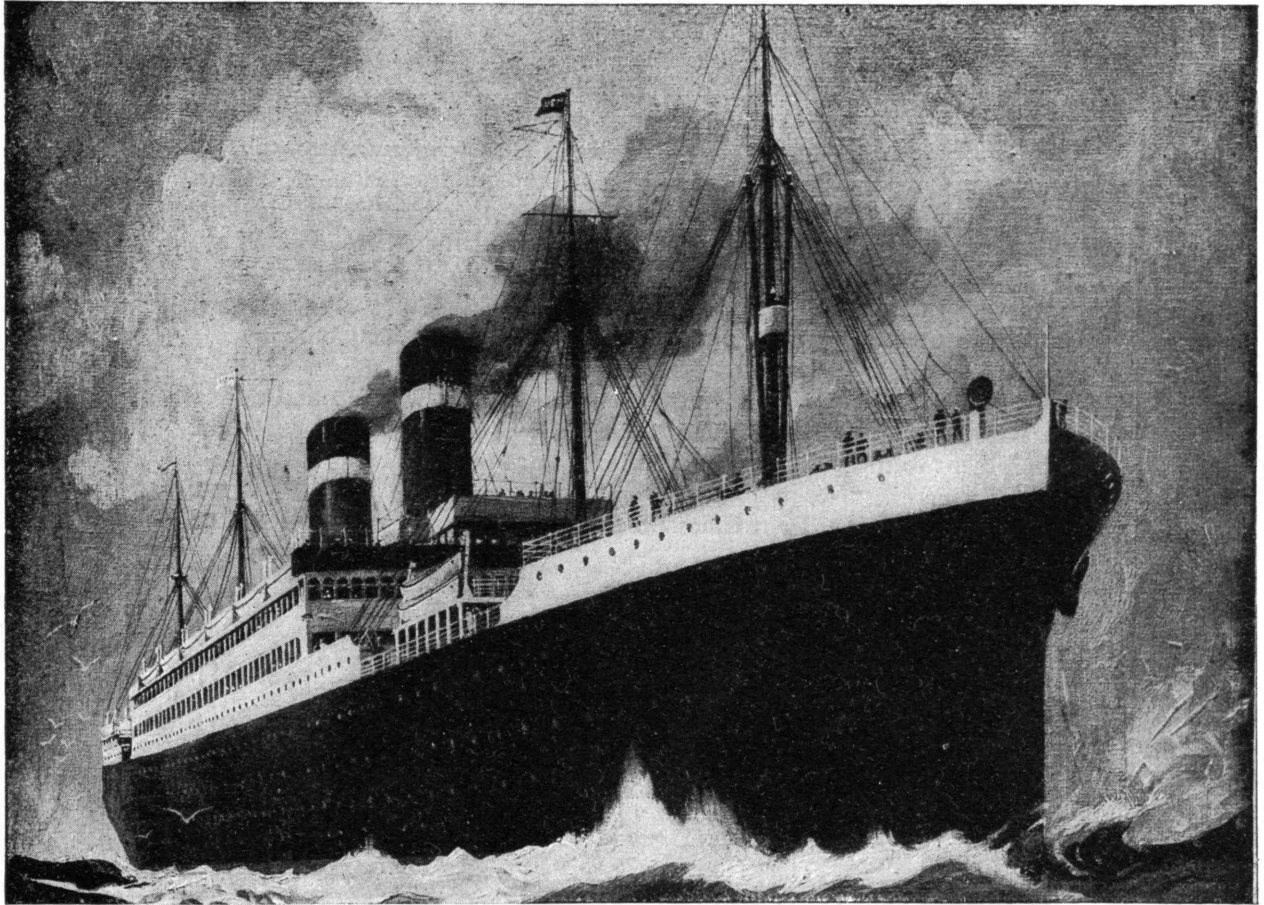
FOLLOWING upon the Report of the Visiting Committee of the Department of Architecture published last month comes a similar report covering the Department of Biology and Public Health. These reports are published at the wish of the President and the Corporation, in order that Alumni may know of the growth and work of the various departments at the Institute.

THE water color reproduced on the cover of this issue was executed by Samuel Prout, an Englishman famous as a painter of cathedrals and continental market-places. He was born in Plymouth in 1783 and died in Camberwell in 1852. While water color was his chief medium, he was one of the first to turn lithography to account. Ten of his subjects are in the South Kensington Museum and the one reproduced in this issue is in the possession of the Department of Architecture as a loan from the Boston Museum of Fine Arts. The best memoir of Prout was written by John Ruskin.

THE REVIEW is constantly on the lookout for unusual and beautiful photographs of scientific and engineering subjects. They are exceedingly rare and the professional photographers seemingly have no eye for them or else no market. A few are just beginning to realize what fetching shots, pointing morals and adorning tales, may be made in apparently mundane places; for example the photograph on page 86 taken from a railroad signal tower, or those on page 93 showing the construction of the Hudson River Bridge. A few more to appear soon have been unearthed — excellently composed pictures taken at oblique angles and showing much camera-craft — of bridges, construction projects, airplanes, and locomotives. They all tell eloquent stories, depicting strength and power. But more are needed and it is hoped that some amateurs may read this, go out gunning, and then submit their prints. Good ones will be bought.

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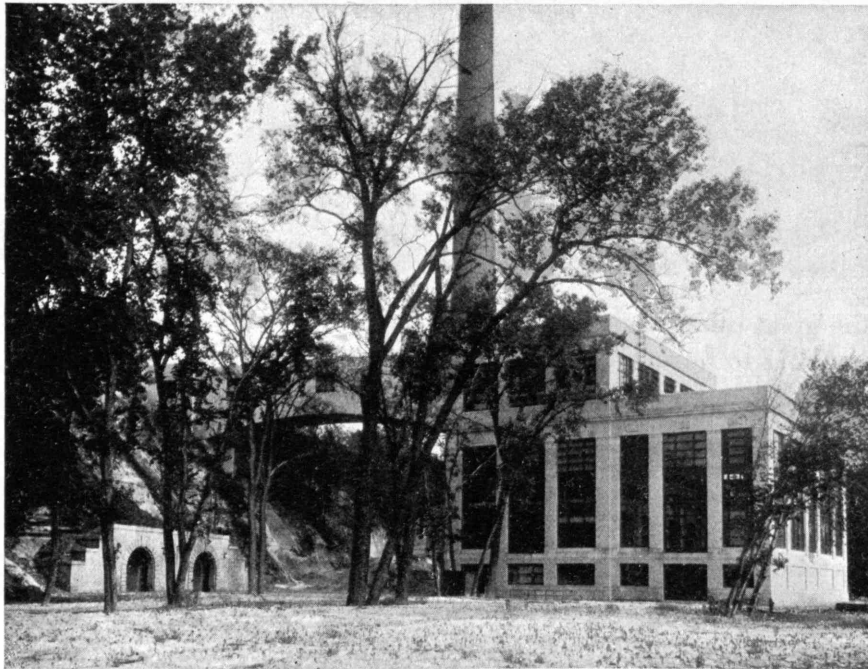
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Illustrated is the Twin Cities Steam Power Plant of the Ford Motor Company at St. Paul.



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The TECHNOLOGY REVIEW

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TERRACES AND TOWERS

The Evolution of the Skyscraper

BY THOMAS E. TALLMADGE

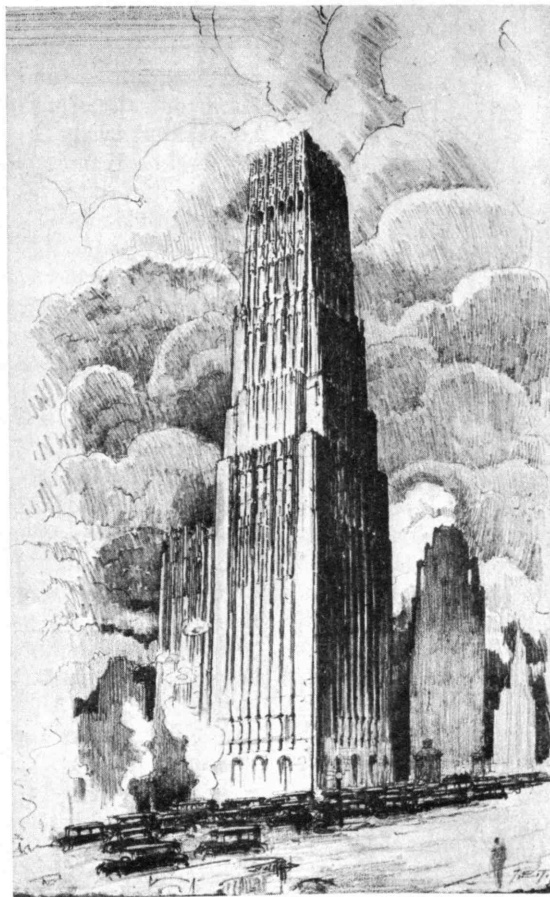
THERE are a number of truisms which, while they need not be dwelt upon, cannot be ignored in any discussion of the evolution of the American skyscraper. One of these is that the skyscraper is America's greatest gift to architecture; another is that America now leads the world in architecture. If it were not for the first truth, the second could never have been uttered. Another truth, less picturesque, perhaps, is that the period from 1886 (the birth year of the skyscraper) to the present time is far and away the most brilliant in structural engineering that the world has ever known. But to me the most interesting, the most thrilling truth is that the new era, of whose impending presence there can be no doubt and whose architectural manifestation we call "modernism," is riding into our lives on the proud shoulders of the skyscraper.

The skyscraper, and by that we mean the high building whose essential part is its structural steel skeleton, is a product of Chicago. We forget, or are too young ever to have heard, that in the years immediately clustered about the World's Fair, say from 1889 to 1900, Chicago was famous the world over as the birthplace and breeding ground of the skyscraper. Here in brilliant succession the various and essential steps were invented: the partial use of skeleton steel in the Home Insurance Building, 1884; its complete use in

the Tacoma Building in 1886; the developed office plan in the Rookery, 1890; the all-terracotta building, the Rand-McNally, in 1891; the Masonic Temple, the highest building at that time in the world, 1892. The high-speed elevator owes its genesis and development to New York City, where, way back in 1859, according to Colonel

Starret, it was first used in the six-story Fifth Avenue Hotel. Other efforts to lighten the loads of masonry walls were developed in New York, such as hollow tile and the cast iron front, but Father Knickerbocker looked askance at the skeleton steel building and refused to issue any building permit for such a type of structure until 1889, thereby absolving himself from any of the honor of its early development. The problem of foundations, while not vital, was obviously important, and an especially difficult one to solve for those intrepid western engineers, as Chicago is built on a stratum of muddy clay seventy feet thick. In the East one has only to bare the rock. So foundations evolved from the ordinary continuous stepped variety to the isolated footing and then to the "floating" slab of concrete and railroad iron; next, to piles, which, curiously were not used from the first; and, last, to the miscalled caissons, which are concrete columns.

The story and controversy of the first skyscraper has been hashed and rehashed so many



From a lithograph in "The Story of Architecture in America" by Thomas E. Tallmadge: W. W. Norton and Company, Inc.

THE AUTHOR'S CONCEPTION OF ELIEL SAARINEN'S
SECOND PRIZE WINNING DESIGN FOR THE CHICAGO
TRIBUNE TOWER



Ewing Galloway

THE CHANIN BUILDING: NEW YORK

times, at least in the West, that it is no longer a *casus belli*, but it used to make the fur fly. Briefly here are the facts: in 1884 Colonel LeBaron Jenney, architect and engineer, raconteur and gourmet, started the Home Insurance Building in Chicago. In the major part of this building a true skeleton iron and steel construction is used. In 1887 the Tacoma Building, (Holabird and Roche, architects; Purdy and Henderson, engineers), was built on an exclusively steel and iron skeleton frame. Use your judgment as to which deserves the greater honor. Perhaps a precedent exists in the discovery of America, of which Mark Twain closed the subject by remarking that after Columbus discovered it, it stayed discovered!

These early skyscrapers, that is, those built before the World Fair in 1893, were of the Romanesque style, all long-legged, gawky children of Richardson's Trinity Church in Boston. After the Fair, which put the Romanesque revival out of its misery and introduced eclecticism, skyscrapers became for the most part classic in style.

The period between 1893 and the World War was a brilliant one for the engineers, but almost a disgraceful one for the architects. Thousands of skyscrapers throughout the land were built like huge ugly boxes, each with a base, shaft and cornice, and each pretending to be solid masonry and doing its best to conceal the presence of its marvelous steel skeleton within. Truly the architects feared the engineers bearing gifts. The pains and expense architects took to carry out these monstrous falsehoods are evident when one looks at classic cornices hanging by hooks, angles, and heaven knows what unless it be the force of precedent, two hundred feet above the sidewalk; at huge granite columns supporting not even themselves; at great stone façades resting on sheets of plate glass; at Parthenons and Farnese Palaces stretched up into heaven as though they were India rubber. Had the architects of the day picked on the Gothic style with its perpendicular accents, the story might have been different. Louis Sullivan, '74, pleaded, stormed, and fought in vain, and even such incarnated arguments as the Gage Building in Chicago or the Condict Building in New York City made no impression on the classicists. A devoted band of Sullivan's disciples, often called the "Chicago School," with his famous principle, "Form follows function," for a battle cry, waged a losing fight against the ravenous appetite for classicism left by the World's Fair, the influence of the Beaux Arts, and the emphasis placed upon classic architecture in our own architectural schools. In the meanwhile, Chicago had lost its preëminence gained in the invention and early development of the skyscraper, and New York, dominated by the suave genius of McKim, took the center of the stage. Soon buildings there like the Times Square, the Ivans Syndicate, the Metropolitan Tower, or even such Beaux Arts creations as the Singer Building or the Saint Regis Hotel with their picturesque silhouettes, became improvements on the corniced and flat-topped boxes erected in Chicago at the same time.

Although illogical to the purist in many respects, the West Street Building in New York City, which won for Cass Gilbert, '80, the Gold Medal of the American Institute of Architects, brought,



CASS GILBERT'S ('80) NEW YORK LIFE BUILDING: NEW YORK



Sigurd Fischer

CORRIDOR IN RALPH T. WALKER'S ('11) NEW YORK TELEPHONE COMPANY BUILDING

perhaps for the first time real beauty to the skyscraper. Another great step in advance was the Bush Terminal by Helme and Corbett. In its sheer outline almost bereft of anachronism is the prophecy of what has come to American architecture since the World War. The culmination of eclecticism came with the Woolworth Tower. Built during the years of 1911 to 1913 by Cass Gilbert, it was hailed at once as a supreme work of art. It was not, however, a complete solution of the problems of the skyscraper. It demonstrated the vast superiority, as an architectural covering of the steel skeleton, of the vertical Gothic over the horizontal Classic and the beauty of the towered skyline. Look across City Hall Park at the contemporary Municipal Building with its cornices and colonnades if you don't believe it. The trouble was that architects, in the designing of the skyscraper, had been burdened with too much liberty. Practically no limit had been placed on their height or form in New York at least, and city streets were rapidly being converted into gloomy canyons. The ribbon of sky left between them was further cut down by the crowning cornice, which had become by this time not only an absurdity, but a nuisance and menace as well. In 1916 was passed the New York zoning law, and in a few words the architectural transformation of New York City was ordained. Under what seemed at first to architects to be a disastrous limitation of their abilities, architecture in a short time emerged as a fascinating and inspiring game. As everyone knows, under the New York law you have got to keep behind a straight line drawn from the center of the street through a point 150 feet or so, depending on the locality, directly about your lot line. Chicago followed with a law that permits buildings to rise 250 feet vertically from

the lot line, and above that line restricts the structure to twenty-five per cent of the ground area. So by a stroke of a pen New York becomes a city of terraces, a modern Babylon, and Chicago a city of towers, a present San Gimignano.

In 1922 the Chicago *Daily Tribune* announced an international competition for a skyscraper to house their newspaper and to provide suitable offices. They boldly stated that they hoped to build from the competitive designs the most beautiful building in America. The winning design of Howells (J. M., '90) and Hood (R. M., '03), a brilliant and beautiful thing built without curtailment of any sort, goes far toward carrying out this specification. But it is the second prize design by Eliel Saarinen, a Finn, that has become a milestone in our architectural progress. I have been accused of exaggeration in ascribing so tremendous an influence to a design that has never been built, but, as I see the skyscrapers of the new era rising to unbelievable heights and in an unknown beauty from coast to coast, I realize that the spirit of Saarinen's design animates every one. Louis Sullivan described it thus: "It is a voice resonant and rich, ringing amidst the wealth and joy of life. In utterance sublime and melodious it prophesies a time to come, and not so far away, when we shall escape the bondage and the mania of fixed ideas.



Ewing Galloway

WOOLWORTH TOWER. IN THE FOREGROUND NEW YORK CITY HALL



Ewing Galloway

CHANIN BUILDING FROM A
NEARBY ROOF GARDEN

an expression of upward growth within a composition of rectangular masses. The ornament, although this is not so essential, is almost exclusively what we call for the lack of a better name "modernistic." As a plain matter of fact, it solved the problem of the skyscraper, a problem that architects had unsuccessfully struggled with for thirty-five years. Corbett almost guessed it in the Bush Terminal. The supreme desire for beauty led Cass Gilbert just a little off the right path in the Woolworth Tower. Bertram Goodhue might have grasped it had the Nebraska State Capitol Building been a skyscraper.

Almost over night the skyscraper was revolutionized. Raymond Hood, in the American Radiator Building, New York City, led the way. The great telephone buildings in New York City, San Francisco, and St. Louis, next, were built on the new principle. In Chicago, Holabird and Root, of the second generation of skyscraper architects, have thrown themselves enthusiastically into the new movement, and have created three inspiring buildings: 333 North Michigan, the Palmolive Building, and that of the Chicago

It goes freely in advance, and, with the steel frame as a thesis, displays a high science of design such as the world up to this day had neither known nor surmised. . . . Rising from the earth, it ascends to beauty lofty and serene, until its lovely crest seems at one with the sky." It's the best design since Amiens! In a word, it eliminates all cornices and horizontal accents. Vertical elements are insisted on, and are expressed by piers (covering the steel columns) which begin at the ground and rise and recede at the step-offs until they pierce the skyline. It is

Daily News. Across the street from the first of these Burnham Brothers, also of the second generation, have erected a green and gold skyscraper. Others are rising on all sides, and all, without exception, have abandoned the cornice and adopted the formula of the new era. The same story in greater extent is repeated in New York City, and Detroit is a good third. San Francisco, Los Angeles, Birmingham, and little Tulsa, modernistic to the core, follow in the train.

Clustering around the intersection of Lexington Avenue and 42d Street, New York City,

is arising a family of structural giants. The Chanin Building is fifty-six stories high, the unfinished Chrysler Building appears to be at least sixty, and the Lincoln Building dizzily towers to an almost equal altitude.

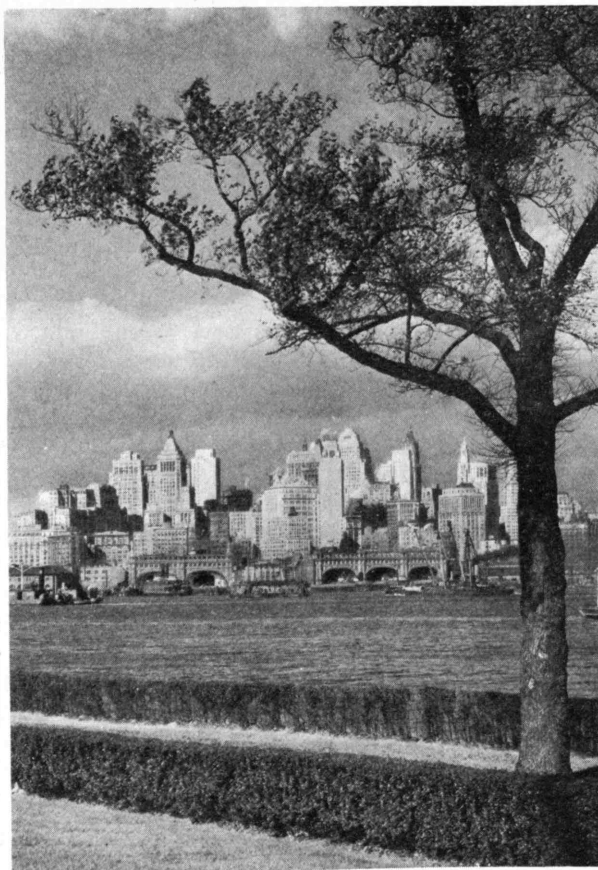


Ewing Galloway

RAYMOND M. HOOD'S ('03) AMERICAN
RADIATOR BUILDING

These three are all modern, ultra-modern in their absence of cornices, their setbacks and their modernistic ornament, to say nothing of their structural audacities and innovations. In sharp distinction at the foot of Park Avenue arises the equally modern chronologically and protuberantly ugly Grand Central Building, returning for some mysterious reason to *ante bellum* cornices, engaged columns and the warty epidermis long since cast off by its clean and sleek sisters. In fact the best definition I have heard of the style of the modern skyscraper was given me by Gilbert Hall, the designer of the Palmolive Building, who said his building was "clean architecture," especially appropriate perhaps in that design.

Seventy-five stories (more or less, depending upon the value of the land) have been placed as the profitable limit to the skyscraper under present (Continued on page 104)



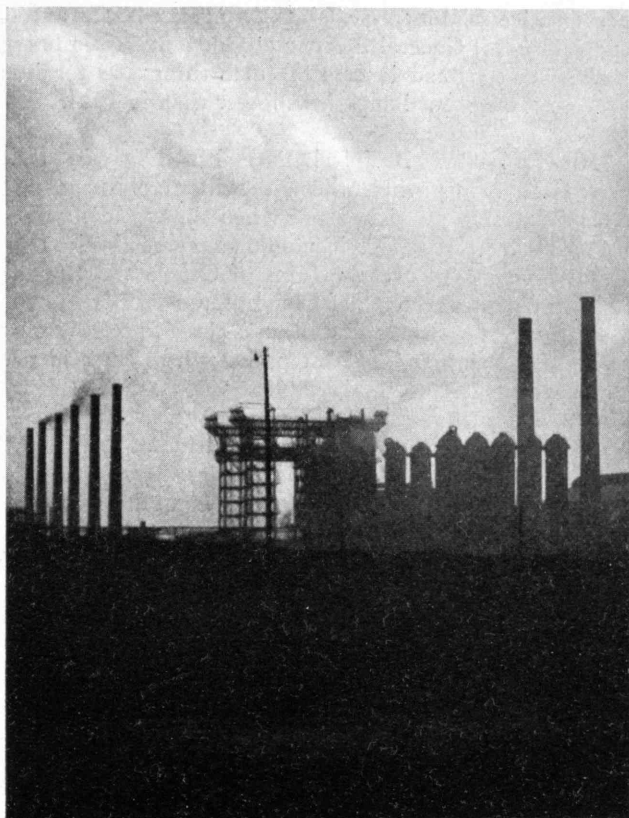
Ewing Galloway

LOWER MANHATTAN FROM GOVERNOR'S ISLAND

RESEARCH AND LABOR

A Chemist Looks at Modern Life

BY ARTHUR D. LITTLE



H. Armstrong Roberts

WE ARE LIVING in the age of science, the machine, and mass production. Like all the ages which have gone before, it is not without its contemporary critics. They would have us believe that science threatens to cause the destruction of our civilization; that the worker has become the slave of the machine; and that mass production has engulfed us in materialism, converted the craftsman into the tightener of a single bolt, and robbed the world of beauty.

All this, if true, would be, indeed, a sorry outcome of the long series of intellectual triumphs which, during the last one hundred and fifty years, have given man so large a measure of mastery over his environment. That such ideas find currency, as they undoubtedly do, among many thoughtful and sincere persons is, in itself, a challenge to scientists and engineers. Let us consider together what, if any, justification there may be for the indictment.

Bertrand Russell, in "Icarus," says: "At present all that

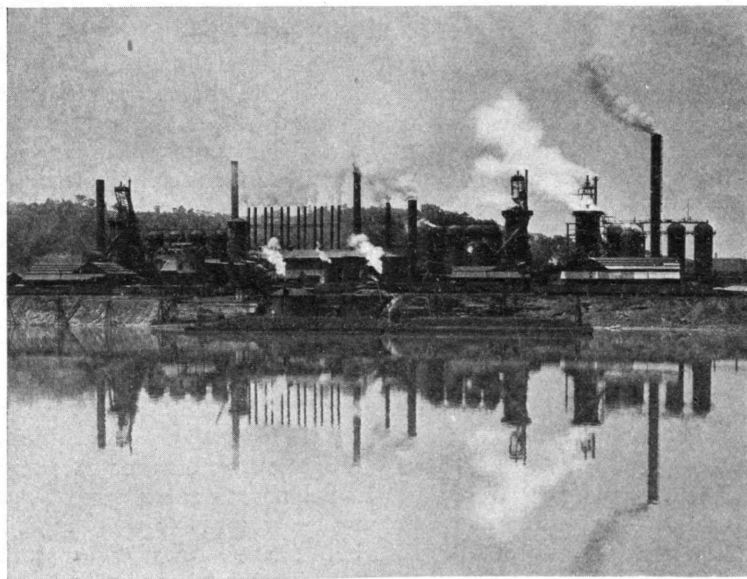
gives men power to indulge their collective passions is bad. That is why science threatens to cause the destruction of our civilization." In spite of its phrasing, it is obvious that Mr. Russell's charge is not against science but against humanity, and we may find comfort in the thought that, upon the whole, humanity seems to be improving. Meanwhile, science is advancing at a rate so rapid that the peoples of the earth who might otherwise indulge their collective passions will presently decline to engage in a business so vastly expensive and mutually calamitous. If philosophy and religion cannot bring peace to the world, our hope for peace is in more science.

When we pass to the second item of the indictment we find that the machine as it exists today, in all its complex manifestations, is the undoubted product of science, and that for its reaction upon our civilization science must assume a large measure of responsibility. Moreover, without the machine, mass production would be impossible. What, then, is the actual relation of the worker to the machine, and what is the relation of the machine itself to society at large?

There was published in April, in London, a magazine called *The Realist* and styled "A journal of scientific humanism." In the first issue there appeared an article by John Gibson under the title, "Has Labour to Fear Science?" I do not know to what extent Mr. Gibson, who is himself a building trade worker, is entitled to speak for others in the ranks of labor, and I cannot, of course,

present his argument fairly in a few extracts from his paper. Nevertheless, I venture to quote a few sentences which must be regarded as of sinister significance if the opinions they express have any wide acceptance. Mr. Gibson says:

"... Plainly science, its content and its method, is far beyond the reach of the great majority of Workers, and those who have gleaned the little knowledge within their reach, generally misunderstand its inten-



Ewing Galloway

SPANG CHALFORT STEEL PLANT ON THE ALLEGHENY RIVER

tions. . . . The machine with its consequent displacement of labour is hated and dreaded by the Workers. . . . The Workers do not understand why every step in the line of progress should be taken at their expense. The injustice of the thing appalls them, and they lay the blame on the most apparent cause — which is science.

"Where the Workers are sufficiently organised they will strike against the introduction of any new method or machine that is likely to cause a displacement of labour; it is one of the few things that they are really united about."

In so far as such displacement is likely to be permanent one can view this attitude of the individual worker with entire sympathy and understanding, but as a general policy it can only be disastrous to labor. Goods must be sold in a competitive market, and if by old methods they cannot be made at a price to meet the competition of the newer method, not only is the individual, but all his fellows in the industry, finally out of work.

MY FIRST LESSON in industrial economics was received one afternoon, when, as a boy, I was climbing Mount Chocorua, in New Hampshire. I came upon a berry picker who was eating a luncheon of dry bread, while beside him were several milk pails heaped with blueberries. Tactlessly, but not unnaturally, I asked him why he didn't eat the blueberries. His answer was, "I can't afford to eat them." In other words, the labor cost and consequent market value of the picked, wild blueberries in his pails were too great to permit him to consume them.

Some years later a simple tool was invented. It was little more than a dustpan, fitted in front with teeth similar to a rake, but it enabled a man to pick a bushel of blueberries in the time formerly required to pick a quart. At once the labor cost of blueberries went down. Canneries were established. Many more pickers found employment, and though they received far less per quart, their daily earnings were so greatly increased that they could have lunched on caviare sandwiches had they cared for them.

In the larger aspects of industry the same process goes on in an autocatalytic cycle. Through research we come to automatic machinery and better manufacturing methods. These result in lower costs. Lower costs permit higher wages and lower prices, both of which stimulate consumption. To meet the new demand the scale of production rises, permitting new economies, which further lower costs. To maintain mass production there must be mass buying, and mass buying is possible only with high wages.

In April, 1926, the General Electric Company issued to its stockholders a circular to tell them what their company was accomplishing in its Schenectady plant by the introduction of more automatic machinery and improved methods. In 1914 the number of workers employed was about 15,600. In 1925 it was 21,000. Their average income in dollars actually paid per week increased during this period 107 per cent, while the cost of living went up only sixty-eight per cent. Similarly, the money value of the annual product of the plant increased 179 per cent, and although the average of com-

modity prices had increased sixty-two per cent, the average price of all General Electric products had risen only sixteen per cent and in case of some things, as for instance, incandescent lamps, was lower than in 1914.

THERE HAVE BEEN LONG PERIODS in the world's history when otherwise brilliant civilizations based on slavery flourished and when the world's work was done by slaves. Their monuments remain in the pyramids of Egypt and the ruins of Greece and Rome. In Italy during the time of Claudius the proportion of slaves to freemen is given by Blair as three to one, while in Greece, during her greatest period, there are said to have been 12,000,000 slaves to 5,000,000 freemen. Slowly, and with many recessions through the centuries, the machine, together with some education of the heart, has brought emancipation to the worker.

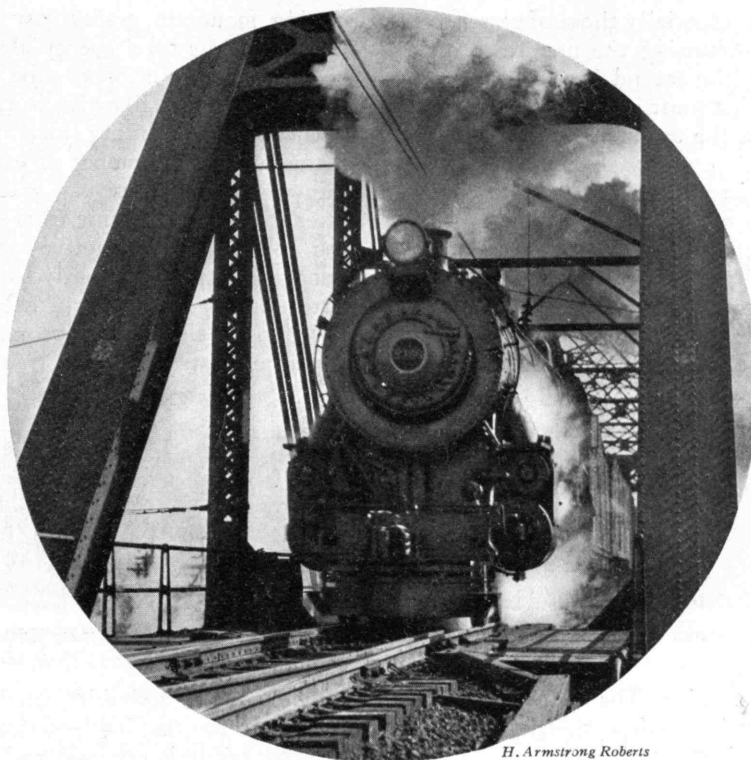
In the early Middle Ages, craft workers in Europe were better off than the slaves of the Roman system, but they were serfs. Their lives were cheaply held. For the murder of a goldsmith one paid 150 sous; for that of an iron worker, fifty sous; a carpenter was appraised at forty sous, and a common laborer at thirty. Even in England as late as the eighteenth century the condition of the working population was often deplorable and precarious in the extreme. Such amelioration as at first resulted from the Industrial Revolution had, by the middle of the nineteenth century, for the most part disappeared in the factory system as then developed in England, Europe, and America, and particularly in the textile trades.

Without this background it is impossible to realize the enormous gains for which the worker in our own times is indebted to the machine. There is, it is true, little place in the Machine Age for the artisan of the old type. There is no longer much demand for the product of his laboriously acquired skill. As Usher points out: "Modern industry has its great rewards for the *man*. The introduction of machinery has not made men slaves; it has emancipated them and placed the emphasis upon the fundamental character of the individual. . . . The old distinction between the skilled and the unskilled might better be abandoned for distinction between the responsible and the irresponsible."

The jinricksha man is still slave to his machine. The locomotive engineer is master of his. What driver of a motor truck would change places with a transport coolie? What operator of a band saw would take his place in the pit to work one end of a two-man saw while blinded by the shower of sawdust? Yet riots followed the first attempts to establish power sawmills.

Who would prefer handling pig iron, pig by pig, by the strain of his own muscles, to moving tons at a time while comfortably seated in the control house of a magnetic crane? Brawn, without intelligence, can make slow progress with a spade. It takes a man to operate a steam shovel or pick up a car of coal or iron ore and dump it with a turn. Who would rather swing a sledge than feel that he controlled the mighty power of a steam hammer?

But the machine has brought mass production and the man who spends his working hours tightening a single bolt. I have watched him at work as the Ford automobile was assembled in twenty minutes, and he seemed to like the job. He wasn't merely (Continued on page 106)



H. Armstrong Roberts

STEAM VS. ELECTRICITY

The Trend toward Railroad Electrification

BY DUGALD C. JACKSON

EDITOR'S NOTE: The following article is derived from an extended paper presented last month to the World Engineering Congress, the author being chairman of the American Program Committee for that meeting. In succeeding issues The Review hopes to publish other important Engineering Congress papers.

IN CONSIDERING the applicability of electrification to American railroads, it is pertinent to review the reasons which already have led to certain installations of electrification in the United States. Without going into the details of the electrifications which have occurred and which have been described many times,* it can be stated that by far the major number of

* They are summarized, up to the year 1924, in a paper by the present author presented at the First World Power Conference and entitled "Power for Transport-Railroad Electrification."

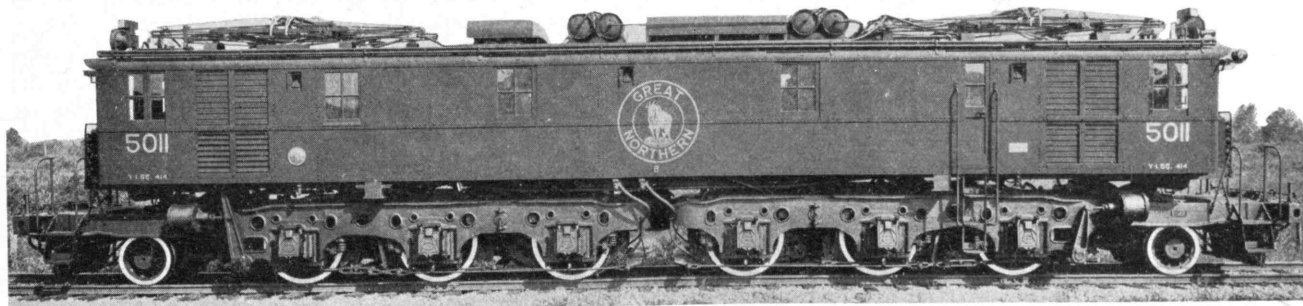
these electrifications can be ascribed to some one, or jointly one or more, of five controlling reasons:

(1) To fulfill requirements enforced on the railroads by authoritative bodies, as in certain city terminals, principally to secure relief from smoke and noise.

(2) To secure safety and comfort by eliminating smoke and deleterious gases, as in long tunnels and at city terminals.

(3) To secure reliable and efficient operation over very heavy grades.

(4) To secure more effective use of track where very heavy traffic conditions prevail, either on main lines or at terminals; and operating economies which are secured when large daily locomotive mileage can be made.



GREAT NORTHERN A.C.-D.C. MOTOR GENERATOR TYPE LOCOMOTIVE ON GENERAL ELECTRIC TEST TRACK. 260 TONS; 3000 H.P.

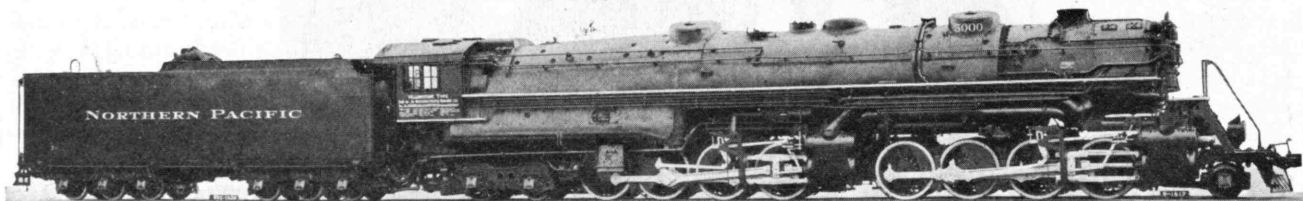
(5) Patronage demands, especially those of passengers.

There is no need for discussing the first reason and little need for discussing the second because the relief secured by electric operation must be evident to all who have had experience with the use of steam locomotives in long tunnels.

In considering the third and fourth reasons, involving either very heavy grades or very heavy traffic or both conjointly, it should be evident that the physical movement of trains is primarily a matter of tractive ability and that if sufficient locomotive capacity is provided, equally heavy trains can be hauled up a grade with steam or electricity and equal speed can be maintained

varying mountain grades may be from ten to twenty per cent of the total energy absorbed from the contact wire. The saving in brake-shoe and wheel wear also is very material, as likewise is the reduction of general wear and tear on rolling stock and track.

America has a number of examples where increased train weights on heavy up grades have been hauled at faster speeds by changing from steam locomotive operation to electric locomotive operation, but the extra tonnage and speed obviously have been accomplished by putting a larger amount of effective locomotive horsepower on the electrically operated trains than previously existed on the steam operated trains. In each instance where



NORTHERN PACIFIC STEAM LOCOMOTIVE, FOUR CYLINDER SIMPLE — NUMBER 5000

Courtesy Northern Pacific Railroad

with either type of locomotive. The relative serviceability of steam and electric traction, therefore, is primarily a matter of economic comparison.

The electrification of heavy grades has received very careful consideration, particularly because of slow train speeds under steam operation. It is of common recognition that electric locomotives are effective in drawing a heavy train up a steep grade, but it also should be recognized that the advantage of electrification on the trains going down the grade may be of equal importance. With electric locomotives of suitable types it is possible to control, with a minimum use of air brakes, the speed of trains on descending heavy grades by employing the electric power-regenerative feature of the locomotives.

This matter of train control in going down steep grades is one that has caused steam operators great concern over the possibility of the brakes failing to operate properly, resulting in either a runaway or a buckled and derailed train. On some heavy mountain trains, operated by steam locomotives, it has been found necessary to stop for considerable periods at various points going down hill in order to allow over-heated brakes and wheels to cool. With electric traction there are two separate means of restraining or stopping the train, *i.e.* (a) the electric power-regenerative feature which is characteristic of several types of electric locomotives, and (b) the usual automatic air brakes which are standard equipment on American railroad trains. On operating down steep grades the regenerative feature is used for controlling the train speed, a method of braking which assures that the cars remain properly "bunched," thereby promoting safety and reliability on down-hill operation. Air brakes on these trains may be reserved for use when a full stop is needed or an emergency arises.

The power regenerated from descending electric locomotives is also of value in reducing the net consumption of power for the system since the energy returned by regenerative braking of a freight train over a route with

such results are desirable, careful consideration should be given to the cost and practicability of accomplishing the same result in tonnage and speed by providing an equivalent and available horsepower capacity in properly proportioned modern steam locomotives, and comparing the same with the cost and practicability when using electric locomotives. Whenever steam locomotives are employed for such service it is important that adequate engine capacity be used so that sufficient speed can be maintained; otherwise the locomotive boiler and cylinder capacity is not being fully utilized. There is still a difference of opinion among American engineers regarding the relative superiority of steam and electric locomotives for use where the trains are heavy and the grades stiff, but it is demonstrable that there are many such situations in which electric locomotives correctly chosen are sure to prove the more satisfactory.

A heavy grade section on a railroad may be of a relatively short length, and much less in length than a normal engine division even for steam operation (engine divisions for electric operation may be made much longer than for steam operation) so that the same locomotive normally operates over a varying grade, thus requiring a varying amount of tractive effort. It is evident from the torque-speed characteristics of the two types of locomotives that with many combinations of grades which may occur, a steam locomotive could operate at maximum horsepower over a more extended portion of the route than an electric locomotive of the same maximum rating, and thus make better time; unless the traffic is sufficient to make it desirable to haul heavier trains than can be satisfactorily hauled by one maximum steam locomotive having the desired speed possibilities, in which case a single or multiple cab electric engine may be preferable to two steam engines.

All of these factors need careful analysis and consideration where steam traffic already exists, and replacing the steam motive power by electric motive power is under consideration. In situations where new

motive power must be secured in any event, either of steam power or of electric power, for betterment of conditions or because the line is new, the economic conditions look more favorably toward electrification, even when good steam motive power is already on the ground available in sufficient amount.

Very dense traffic conditions are fundamentally favorable to electrification, and this is notably true in situations where freight and passenger traffic of widely diverse speeds are approaching the limit of track capacity for steam operation with existing steam motive power, since the movement of the heavy slow trains at a faster speed over the route may be accomplished more readily by using electric motive power than by using steam motive power. This is true whether the route involves serious grades or is of moderate rolling gradients. Moreover, in crowded passenger terminals, the use of multiple-unit electric trains relieves congestion by eliminating the idle engine movements associated with switching where steam motive power is used for such trains. The stress of traffic density seems likely to dictate the installation of electrification on some important routes and in additional passenger terminals in the United States, where other conditions might yet be suitable for efficient use of steam motive power.

Electrification involves investment in fixed plant items for the electrical converting and conducting system, which has no counterpart in the investment associated with

speeds of the different classes of trains in the freight and passenger service. This latter relief may be gained by means of electrification, using multiple cab locomotives with unit control for freight trains and the heaviest passenger trains, single cab locomotives for intermediate trains, and trains of multiple unit electric cars for local passenger service if such exists in important amount, thereby reducing the diversity of time occupied by the trains for traveling over the route. By such means enhancement of the transportation capacity of the existing tracks may be secured and the larger investment required for additional tracks be correspondingly postponed. It is estimated that from ten to twenty per cent can be added by this means to the capacity of a two-track route of moderate gradients which carries the widely diverse traffic composed of several classes of trains of differing scheduled speeds characteristic of American trunk line railroads. Where grades are very heavy the improvement is larger, and where suburban service is controlling it may be as much as twice as great as the figures named.

There are certain items of operating expense which experience has shown ordinarily to be definitely less for electric operation than for steam operation; particularly the item of locomotive maintenance per engine-mile, which for electric locomotives of general type with direct-current motors may be in the order of seventy per cent less than for steam locomotives of equal



PENNSYLVANIA TYPE FF-1 ELECTRIC

Courtesy Pennsylvania Railroad

equipping a railroad for steam power operation. As the amount of this investment is not a direct function of the amount of traffic, it is obvious that electrification may be an economic success on a railroad of dense traffic although for a railroad of sparse traffic it might be an economic failure.

Certain of the two, three, and four track main lines of railroads in the eastern part of the United States have reached such a state of traffic density on the tracks that relief is needed. This may be secured by adding an additional track or additional tracks to the route, or by building an alternative route, either of which improvements is likely to be very costly to accomplish in a thickly populated region such as that part of the United States which lies east of the Appalachian Mountains and north of the Potomac River. Such improvements also may be exorbitantly costly in a mountainous region where the problems of gradients and curvature are difficult to solve on standards reasonably comporting with heavy traffic. Relief may be secured also by consolidating trains into longer units and reducing the disparity between the

tractive capacity; the item of fuel which may be in the order of thirty to seventy per cent less; the item of track maintenance which is freed from the effect of dynamic augment and nosing characteristic of steam freight engines; and the item of locomotive water supply, which is difficult to secure in some parts of the country. By consolidating trains and providing multiple-cab electric locomotives of greater power combined with more speed than is available in steam engines, the cost of train crews per gross ton hauled may also be reduced.

A further return may be expected to come from reduced divisional operating expenses, in some cases from increased rates of fare for passenger traffic, and in the case of terminals in large cities in notable values established for commercial building sites over the stations and train yards.

The complete economic consideration of a contemplated electrification of a railroad which has been and is using steam motive power of good quality, is far from a simple matter. A competent engineer can without difficulty estimate the new money (*Continued on page 114*)



Underwood and Underwood

ABOVE: CORNER OF NEW YORK NEWS ROOM OF THE ASSOCIATED PRESS. NOTE VARIETIES OF TRANSMISSION DEVICES. OVAL: KENT COOPER, GENERAL MANAGER OF THE ASSOCIATED PRESS

SCIENCE AND

Modern Newspaperdom Owes Its Further Technical Achieve

BY JOHN J.

FOR news, that most perishable of commodities, public thirst can be palliated but never quenched. Its bounds are constantly widening; it knows no seasonal fluctuations; it was never more important than it is today. Nothing is older than last night's newspaper and myriads of correspondents are relentlessly engaged in a pursuit to regather anew the intelligence of the world, swiftly and completely — and accurately. Modern newspaperdom does its thinking in terms of today. Tomorrow it may consider, for tomorrow is news in the making: yesterday is gone, useful merely as a background for facts of the moment. Science is responsible, for science has brought about this situation and technical achievement maintains the seemingly impossible, as the possible.

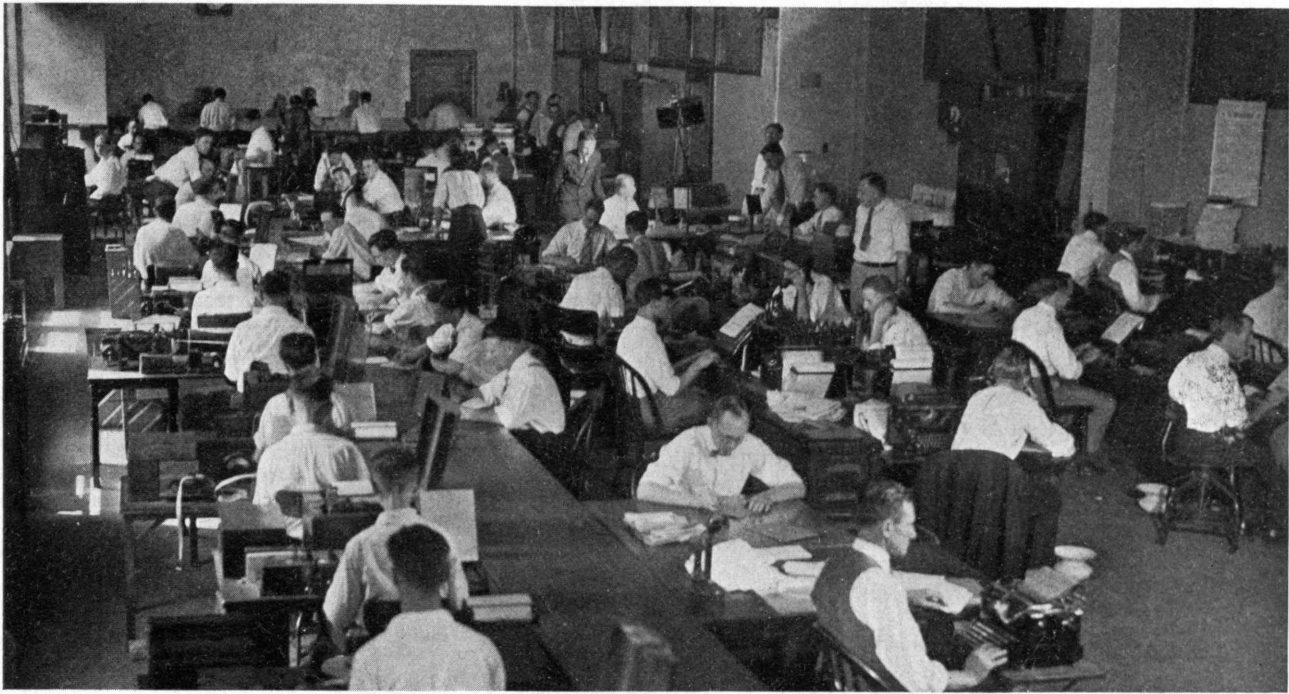
The newspaper, as we know it, was distinctly American in its origin and development. In Colonial days journalism was a leisurely process, an era of personalities when the vehemently expressed views of the editor were the chief distinction of a paper. Material for the news columns brought by sailing ships or couriers was welcomed weeks or even months after the events took place. Type was laboriously set by hand and presswork was equally slow as compared to modern standards. In fact, until the 1840's conditions resembled those of the days of George

Washington. He, for example, was notified by courier of his election some weeks after the balloting, and had occupied the Presidency practically a year before the complete count of the election returns had been compiled.

In the 1840's, however, a new era opened with Morse's invention of the telegraph and the perfection of the rotary press by Hoe. Upon the foundation they created has been erected the modern news-gathering and newspaper manufacturing structure which made it possible to collect and publish tabulated results of Mr. Hoover's victory less than six hours after the last polls closed. The chronology of this progress is a succession of



RECEIVING NEWS BY TELEGRAPH, A METHOD NOW PRACTICALLY OBSOLETE



Price

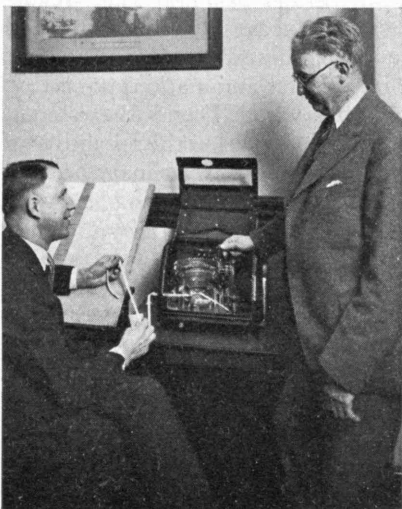
THE FRONT PAGE

*Development to Science and on
ments Its Future Depends*

ROWLANDS

technical achievements, significant in a consideration of what further heights may be attained. A brief review of these achievements is impressive.

Professor Morse completed his apparatus in 1838 and demonstrated its practicability by completing, with the aid of a Congressional appropriation, the first long distance line between Washington and Baltimore in June, 1844. Later it was extended to New York. This line the elder Bennett employed for his *Herald* as early as May, 1846, to relay news of the Mexican War brought by courier to Washington. Thereafter the news content of all papers, for the *Herald's* rivals soon fell in



NEW AUTOMATIC PRINTER FOR RECEIVING STOCK MARKET REPORTS

ABOVE: NEW YORK NEWS ROOM OF THE UNITED PRESS. TELEPHONE PRINTERS ARE ON THE LEFT. OVAL: KARL A. BICKEL, PRESIDENT OF THE UNITED PRESS



Nicholas Murray

line, took on an aspect of timeliness hitherto lacking. Within ten years it was possible to communicate by telegraph with nearly every section of the United States except the Far West.

The first submarine cable linked England with the Continent under the Straits of Dover in 1851. Cyrus W. Field began laying the first transatlantic cable between Valencia, Ireland, and Trinity Bay, Newfoundland, in 1858 and, on August 16 of that year, the first faint signals came across, a greeting from Queen Victoria to President Buchanan. In all 732 messages passed over Field's cable and then it broke. Eight years later, in July, 1866, a new cable was laid and it came into permanent use. By 1872 America and Europe were served by four cables and, by 1888, more than 100,000 miles of undersea circuit were available. Today there are only 261,000 miles under the seven seas but a cable's capacity has meanwhile been increased over 200 fold. Victoria's historic message of ninety words required sixty-seven minutes for transmission while modern automatic transmitters, which have replaced the manual sending methods, now shoot messages at 300 words per minute.

The first telephone conversation took place March 10, 1876, and soon Alexander Graham Bell constructed the



ABOVE: TRANSMITTING NEWS DISPATCHES BY PRINTER TELEGRAPH AS DESCRIBED IN TEXT. RIGHT: RECEIVING NEWS IN THE RADIO DEPARTMENT OF THE NEW YORK "TIMES"



first telephone line between Boston and Cambridge, but it was years before this method of communication was adopted for general news work. Now long distance coverage of news events by telephone is routine and nearly half of local news on large dailies is received by rewrite men from staff reporter by telephone.

The first transcontinental telephone circuit, reaching from the Atlantic to the Pacific, was completed by the American Telephone and Telegraph Company in 1914, marking the most important stage in long distance telephony. In addition to gathering news, the press associations employ the telephone for transmission of "pony reports" or short period news service to small dailies and country newspapers.

Concomitantly with the expansion of world channels of communication attention was inevitably directed to the need for improvement in the mechanical departments of the newspaper. Larger and faster presses with a speeding-up in typesetting methods were needed if the benefit of cable and telegraph were to be fully realized.

The London *Times* was one of the first great papers of the world to encourage the development of press room machinery. In 1845 Richard M. Hoe of New York built a revolving type printing machine for the *Times*, and, in 1846, produced the rotary, his "Lightning Press," propelled by steam, the type being imposed in curved "turtles" upon a horizontal cylinder which, in revolving, came in contact with other cylinders carrying the white paper. William A. Bullock, publisher of a

newspaper in Philadelphia, made the invention of the first press to print from a continuous web of paper. This "perfecting press" came into being in 1865. Luther C. Crowell, a Cape Cod fisherman with rare mechanical talents, produced in the early 1880's a folding device for presses which up to that time had been capable only of delivering uncollated sheets, and Joseph Pulitzer was the first publisher to install one of Mr. Crowell's machines in the office of the St. Louis *Post-Dispatch*. Mr. Pulitzer was nearly demoted by its vagaries and the experience set him temporarily against further "experiments," but in time the Crowell attachment became a success

delivering a neat half-page fold, up to eight pages. Later the invention was expanded so as to produce the familiar quadruple machine, the base of all the monsters of today.

Newspaperdom's modern favorite, the complex double octuple rotary press, has a production speed of nearly 70,000 papers of thirty-two pages per hour. It prints, cuts, folds and counts that number of copies at the touch of a button. By reducing the size of the paper to sixteen pages production is raised to 100,000 copies per hour and this latter figure can be doubled in running an eight-page edition.

The perfection of the linotype, an invention of Ottmar Mergenthaler, of Baltimore, in 1886, effected a revolution in the printing art in that it substituted the line instead of the letter as the unit of composition. Besides being speedier, it dispensed with the necessity of purchasing, composing and distributing type. Many machines, some giving excellent results, had preceded it (the first automatic type-casting machine was probably that which David Brewster of Bordentown, N. J., patented in 1838) but the reliability of Mergenthaler's machine and the wise management of organization building it gave it a commanding lead after its first tryout by the old New York *Tribune*. Today "linos" are to be found in the composing rooms of virtually every large newspaper in the world.

Subsidiary advances also contributed to speedier as well as more economical production of newspapers. Until 1829, when M. Genoud of Lyons, France, adopted papier-maché, wax and clay had been employed for stereotype matrices. Charles Craske, a New York engraver, introduced in this country the papier-maché method in 1854 when he made the first curved stereotype plate for a rotary press in the office of the New York *Herald*. It was not yet possible, however, to multiply the number of plates indefinitely.

Illustrations for daily newspapers came into use in a limited way about 1870, but there were no fast methods of reproduction. In 1878 the photographic half-tone was invented by Frederick E. Ives of Cornell University. Three years later he greatly improved it and adapted it to newspaper work where it rapidly superseded the wood engraving method. By 1886 Mr. Ives had invented the cross-line screen which is still in general use.

In the course of the Nineteenth Century two circumstances gave great impetus to papermaking, an art which, up to 1800, had not been improved to any material extent since the Middle Ages. First, a mechanical method of making paper in a continuous web, instead of by hand in sheets, was found when a Frenchman, named Roberts, invented the Fourdrinier machine. Second, a substitute for rags as the chief constituent was found in wood fibre. In 1867 a machine invented by Herman Voelter of Germany for grinding wood pulp was especially imported and mechanically ground pulp was first produced in this country that year at Stockbridge, Mass. The output was about a half ton daily; it sold for eight cents a pound, being pressed into cakes by hand and shipped in barrels to a paper mill. Chemical processes for manufacturing wood pulp came almost contemporaneously with that of making ground wood. The soda process was patented by Hugh Burgess in the United States in 1854; the sulphite process of Benjamin C. Tilghman of Philadelphia was made commercially useful in Pocomoke, R. I., in 1884.

With invention after invention heaped at their disposal it was but natural that the enterprise of such editors as Bennett, Greeley, Bowles, Dana and Godkin led their papers to reach out to far-away places in efforts to meet a growing public interest in world news. The competitive spirit once aroused, the telegraph and cable bills soared, profits correspondingly diminishing. Publishers soon realized that by cooperating to divide the cost of gathering and distributing national and foreign news the expense to the individual paper would be lessened and the scope of the field covered could be greatly enlarged. Thus was conceived the modern American press association and news syndicate services, the latter being operated often by a large metropolitan daily and serving papers in other cities.

The American beginnings of organized news gathering took the form of more or less isolated groups of newspapers. Out of these through a long process of development of facilities and reorganization have come the modern press association of which the leading examples are the Associated Press and the United Press Associations, both world-wide in scope of operation. Their aim has been to gather from the ends of the earth the bare facts of the news and present it to their newspapers without comment or suggestion as to the conclusions to be drawn from the facts they chronicle. These press associations not only distribute news to American newspapers, but to the press of many foreign countries, and their dispatches are read by more than 150,000,000 people. To the genius of the late Melville E. Stone, its General Manager from 1892 until about ten years ago, the Associated Press owes much of the prestige of its present attainment. Today the two outstanding figures in the American press associations are Kent Cooper, general manager of the Associated Press, and Karl A. Bickel,

President of the United Press. Other press services in this country are the International News Service, operated by the Hearst interests, and the Consolidated Press.

The great foreign agencies are *The Reuter Telegram Company, Ltd.*, of London; the *Agence Havas* of Paris; the *Continental Telegraphen Compagnie* or Wolff Bureau of Berlin, the Tass Agency of Russia and the Canadian Press. The first three antedated American press associations. Baron Julius von Reuter of Hesse Cassel in Germany first established himself at Aix la Chappelle in 1849. Aix was then the end of the telegraph from Paris and Reuter forwarded news from Aix to German papers by carrier pigeons. In 1851 he moved to London. Charles Havas established a carrier pigeon service from Paris to London and Brussels as early as 1835 and Dr. Wolff founded the German agency in 1849.

The sole responsibility of the modern press association is to gather the news of the world accurately and transmit it to member newspapers or clients as fast as possible. Freed from the responsibilities of the mechanical production of individual papers, these news-gathering organizations concentrate upon the collection and transmission problems. Gathering, writing and distribution of news by them goes on day and night without end. Every minute is a deadline and somewhere a newspaper is going to press.

Wireless telegraphy constituted the chief auxiliary adopted after the telegraph and telephone. It was first brought to commercial value by William Marconi of Bologna, Italy, who sent the first signals across the Atlantic in 1903. As early as 1907 some press dispatches were being transmitted, but newspapers and press associations were still skeptical of a channel of communication which at that time was somewhat unstable. Then one of the greatest stories of the century "broke" and wireless almost instantly became a major factor in gathering the news of the world.

At 12:36 P.M. on September 6, 1909, the Associated Press in New York received a message which had come by wireless and cable from Battle Harbor, Labrador. It said, "Stars and Stripes nailed to the Pole" and the signature was "Robert E. Peary." This was the first major newspaper story sent by radio and it could have come by no other means. Within ten minutes every newspaper served by the Associated Press received the news that Peary had accomplished the dramatic and dangerous task to which he had set himself. He had filed his dispatch at a little Marconi station at Battle Harbor whence it was relayed from point to point in the Marconi system until it reached Newfoundland. From there it was transmitted by cable to Canso, Nova Scotia, and onward by land wires to New York.

Contrasted with the facilities of today, Peary's great feat was a long time in reaching the newspapers for his announcement came six months after the day he reached the spot which his instruments told him was 90 degrees — the North Pole. Peary was out of communication with civilization for 400 days but Commander Richard Byrd and the late Floyd Bennett flew over the Pole in 1926 leaving their base in the morning and returning to it the evening of the same day. Newspapers told the story less than ten hours after the plane circled over the Pole. Six years after Peary's message, one of (*Continued on page 116*)



H. Armstrong Roberts

HIGH BALL!

AS THE TOWERMAN SENDS AND SEES AN EXPRESS ON ITS WAY



THE TREND OF AFFAIRS



Grandeur Movies

SWIFTLY OUTGROWING the black and white silence of its flickering infancy, the motion picture has within a morsel of time found its tongue and garbed itself in robes of many colors. And now, while Hollywood's best people are still frantically adding g's to "ing" words and trying to sip soup silently for the talkies, William Fox, far-seeing showman, motion picture opportunist, and first and last good business man, announces Grandeur pictures, which are photographed on a new wide film designed to cover a screen of full stage dimensions. Dazed by this bolt from the blue, Hollywood is again anxiously knocking at the door of the scientist and engineer for advice, (see the prophetic plea for engineers to enter the cinema industry by Joseph A. Ball, '15, in *The Review* last April) for the wide film announced by Fox is only one of a number which are being brought to perfection by leading companies.

All this means new cameras and new projecting apparatus, huge screens and a new technique in the studio. While the veteran of the legitimate stage may smile complacently, the celluloid star must learn the art of make-up all over again. Scenery will have to be built with far greater attention to detail than is now the practice, and many of the camera tricks of the past must be discarded because of the new demands of an enlarged screen. When all these adjustments have been made the Broadway show girl, whole choruses of her in the full stature and colors of life, will be booked for the celluloid circuit to

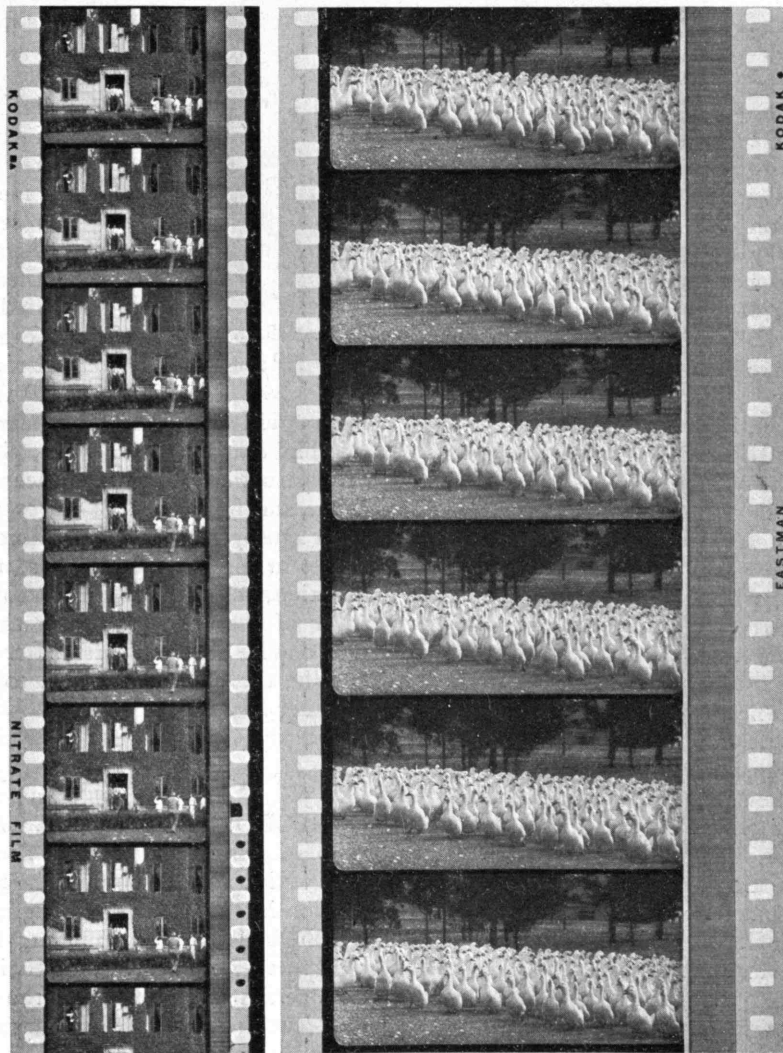
dance and sing on the screens of a thousand small town theaters from Ponkapoag to Tillamook.

The wide film will permit photography of far greater scope than is possible at present, a fact which offers the director and his man Friday, the art counselor, opportunities for mass effects hitherto unattainable. The new film will do away with the cramped sets now sometimes seen, but the closeup, it is predicted, can be used with an even greater palpitating effect.

The film used by the Fox-Case Company is seventy millimeters wide, exactly double the width of the standard film being used at present. The Paramount-Lasky Corporation is working on a film reported to be fifty-six millimeters wide, while the Radio Corporation of America is said to have decided upon a width between that of Fox and Paramount.

Aside from practical considerations, the question involves a nice little problem of proper proportion in the size of the projected image. It is already a matter of controversy. Cortland Smith of the Fox-Case Company says that seventy millimeters is the best width for their purpose. Furthermore, he calls attention to the fact that motion picture film is now manufactured in that width and then split into strips thirty-five millimeters wide for the present standard film. Thus, he holds, there need be no change in the film maker's machinery and production can continue without interruption if the seventy millimeter film is adopted.

That the wide film and the large screen will eventually come into general use seems assured. For the moment, however, the great need is



EXACT SIZES, FOR COMPARISON, OF REGULAR MOVIE-TONE AND NEW GRANDEUR FILMS

agreement upon a wide film of standard width for use in cameras and projectors of new design. The average exhibitor, still bowed under the financial burden of installing sound apparatus, faces the possibility of being forced to buy several machines to project films of special width. Aside from the expense of enlarging projection booths and installing the new wide screens, engineers estimate projectors of the new design will cost between \$10,000 and \$20,000.

Claims to the contrary notwithstanding, the wide film, while increasing the scope of motion photography, does not produce stereoscopic effect. The third dimension still remains the ultimate goal of the motion picture, an achievement which, with perfection of color and sound processes, would bring the screen an illusion difficult to distinguish from life itself.

Nicaraguan Interoceanic Canal

IN 1779 THE KING OF SPAIN sent an expedition to investigate the possibilities of building an interoceanic canal across Nicaragua. Nothing came of it. Seventy years later Cornelius Vanderbilt, then at the height of his power, decided he would dig the Nicaraguan ditch. But he changed his mind, built a road, and, linking the lakes and rivers of Nicaragua in a transportation system, complacently counted his profits. Now a battalion of the 3rd United States Engineers is on its way to Nicaragua to make a survey for a canal.

The Spanish expedition, it seems, reported to a disappointed king that Lake Nicaragua, being some 134 feet above sea level, was in the way, making a canal out of the question. A persistent Englishman in that early field party argued to the contrary, but found no sympathetic ear.

Cornelius Vanderbilt, who learned navigation on his father's Staten Island ferry and later sent ships to the Seven Seas, organized the American Atlantic and Pacific Ship Canal Company in 1849 when the gold rush was at its height. The next year he abandoned his plans to build a canal and organized the Accessory Transit Company, which was to open a transportation system across Nicaragua, being served on the Atlantic and Pacific by his convenient and fast steamship lines. San Juan del Norte, later to be called Greytown, on the San Juan River, was chosen as one terminal, and, lacking an established community at the other end, the Commodore founded San Juan del Sur for his Pacific terminal.

Then in the face of advice and many real obstacles Vanderbilt brought ships to the Nicaraguan shore, and, driven by a will that knew no defeat, he managed with the aid of popping boilers, pike poles, warping lines and capstan heads to drag his vessels to strategic points on river and lake. Without convenient waterways on the

last twelve miles to the Pacific, the Commodore built a fine macadam road, brought in stagecoaches painted blue and white, and put mule drivers in the seats to do the rest. Thus he smashed the monopoly of the Pacific Mail Company, shortened the journey to the Golden West by some 500 miles, and cut the fare \$300.

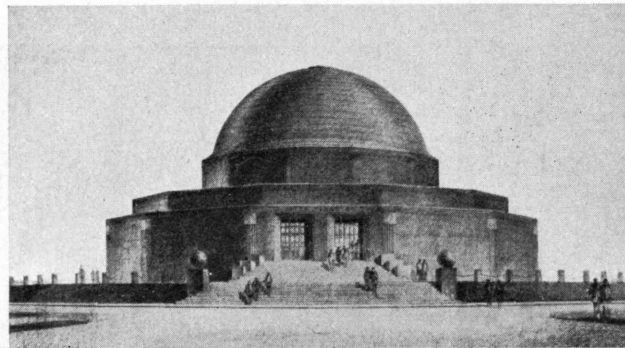
The departure of Army engineers for the mosquito-infested Nicaraguan jungle came about through the activity of Ambassador Edge, who last March managed after much chitchat back and forth to persuade Congress to resolve itself in favor of a survey to determine the possibilities of a trans-Nicaraguan canal. And the Army, having had some experimental skirmishes with a certain gentleman of Central America, is sending its best to make the survey, not only because it has had experience, but because to do so saves money when economy in government is popular. Army transit and level men, chain luggers and rodmen will set out to prove that the Spanish king lost an opportunity and, perchance, that Commodore Vanderbilt was shrewd.

The climatic conditions facing the Army engineers today are the same that the builders of the Panama Canal were called upon to combat. They have the advantage, however, of the work of Gorgas. The malaria mosquito is no longer in complete control of his realm, for tropical medicine has made strides in recent years. Competent Army medical men will be there to carry on their own little war against jungle fevers. Quinine stocks will hold their own.

This formidable undertaking will be carried out under instructions to find a suitable route for such a canal, plus estimates of the cost of construction and maintenance, and to investigate land rights and franchises. A survey was made some thirty years ago by the U. S. Government, but with many advances in engineering methods, as well as costs of construction, it is now necessary to make an entirely new study of the country. It is estimated that the survey will require several years. After the report is made it will be the cue for someone to start an argument on building a canal.

Packets Redivivous

THEODORE ROOSEVELT, who was mainly responsible for the Panama Canal and gave consideration to one in Nicaragua, appointed the Inland Waterways Commission in 1907. In 1910, Congress passed the act under which dredging and damming for the vast hydraulic transport system began, the Mississippi being its "keel." Completion this autumn of the Ohio River project, a nine-foot channel from Pittsburgh to Cairo, Ill., opened a 2,000 mile waterway between Pittsburgh and the Gulf of Mexico on which motor barges can carry bulk freight between these points at less than half the cost of shipping by



DESIGN OF EARNEST A. GRUNSFELD, JR., '18, FOR THE ADLER PLANETARIUM IN CHICAGO



Wide World

THE MISSISSIPPI, "KEEL"
OF HOOVER'S WATERWAY
SYSTEM, AS IT DEBOUCHES
INTO THE GULF

rail. To look upon the Mississippi and its tributaries as arteries of commerce teeming with shipping, as in the days of the packets, is a cheering prospect. Lately it has figured more in the public eye as an agent of devastation. But flood prevention, or more accurately, flood control, is taken account of in the extension of this waterways program to which Mr. Hoover dedicated his address at Louisville.

Today the United States spends \$50,000,000 per year on river and harbor development and \$35,000,000 on flood control. Here are some things Mr. Hoover believes could be done by an additional \$10,000,000 per year (for \$20,000,000 more he could include the Great Lakes-St. Lawrence seaway project recommended by the Engineering Council. *Vide infra*):

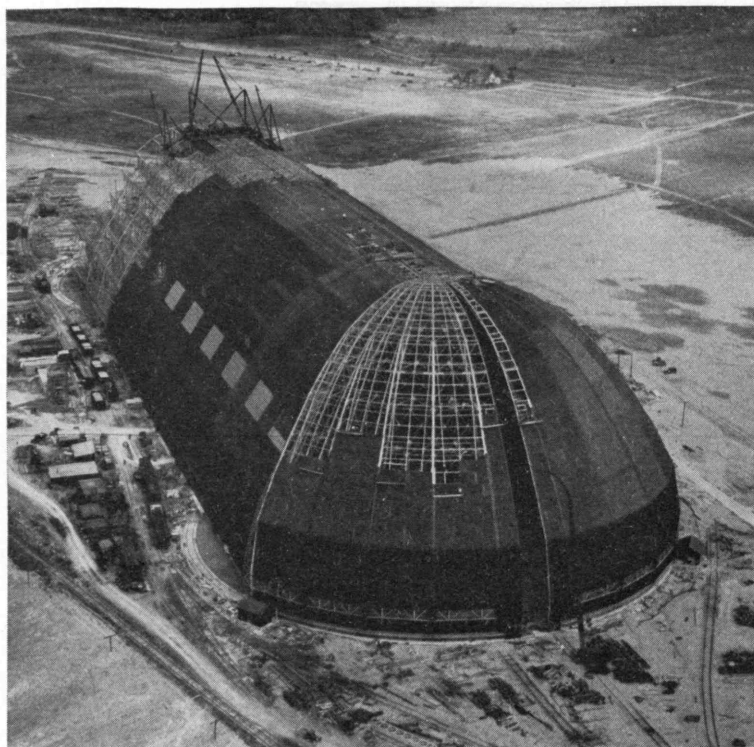
The Mississippi could become a 9,000-mile water transport system reaching from the Twin Cities to the Gulf, with lateral waterways, provided through the development of the Illinois-Missouri, Arkansas and Tennessee Rivers, transforming them like the Ohio has been reconstructed. Five years would suffice for this. Meanwhile, improvement of the channels in the Great Lakes could be continued, their levels could be stabilized, and they could be connected by canal to the Illinois River and thence to the Mississippi. In ten years, the present 746 miles of intercoastal canals could be increased by 1,000 miles.

To this ambitious program, which it is estimated would cost per annum within \$4,000,000 of the total expected cost of the Boulder Dam project, exclusive of the All-American canal, Mr. Hoover has pledged himself "with

all the expedition which sound engineering will permit." He will surely need all possible support if "sound engineering" is to surmount considerations of practical politics. A vastly greater number of people will be affected by the program for the inland waterways than by Boulder Dam; consequently there will be a greater public demand for action. Already there has been a clamor against waiting for an adequate survey of the potentially flooded areas. Fortunately, however, aerial surveying methods have made it possible to accomplish this survey in three months. In all, 11,419 photographs were taken during 412 hours of flying and 8,481 square miles, an area greater than that of Massachusetts, was mapped.

Attempts to apply "sound engineering" to the waterways problem are not new. Seventy-odd years ago, the Government, through the Army Engineers, started the most intensive study of the hydraulics of great rivers that had ever been undertaken. Two young lieutenants published a bulky authoritative tome entitled, "The Physics and Hydraulics of the Mississippi River" and then, with the advent of the Civil War, this kind of work in America stopped.

As John R. Freeman, '76, said in *The Review* two years ago, though "the *art* has been somewhat further developed, the *science* of river hydraulics and river control has slumbered. It still slumbers in America . . ." but in Central Europe, especially in Germany, remarkable development of hydraulic laboratories has taken place. Mr. Freeman's achievements in hydraulic engineering on the Panama Canal, the Yellow River in China and on the



Goodyear-Zeppelin Corporation
DOCK AND HANGAR IN AKRON WHICH IS TO HOUSE THE "ZRS-4" AND "ZRS-5." IT IS 1,175 FEET LONG, 325 FEET WIDE AND 311 FEET HIGH. ITS FLOOR SPACE OF 364,000 SQUARE FEET IS THE LARGEST UNINTERRUPTED FLOOR IN ANY STRUCTURE

Keokuk Dam are well known. The Review will, therefore, be privileged to present next month his views of what has been accomplished abroad in the study of rivers and how hydraulic laboratories are essential to America if Mr. Hoover's "sound engineering" stipulation is to be fulfilled.

Public Lands

MR. HOOVER also has the idea that the Government might well turn over the surface rights of the remainder of the Public Domain to the States for them to administer. Originally, the public land totaled 1,455,000 acres, a no mean area, and, incidentally, equal to about half the present size of the United States. It was acquired largely by purchase and included the Louisiana Territory bought from France, and Florida from Spain, the Oregon country which came by treaty from England, and the Gadsden Purchase ceded by Mexico.

Up to the Civil War, the Government's chief source of revenue was through the sale of public land and, though the sale price averaged only twenty-five cents per acre, it had cost originally but five or six. Following the War, the need for immediate revenue became secondary to the need for the colonization of the West. Choice land, of course, went first, and later homesteading became a gamble. This gave rise to the saying that the homesteading meant the Government would bet a quarter-section against ten dollars that a man couldn't live on his 160 acres for five years without starving. But not all public land was distributed to settlers, for railroads, canals and wagon roads received grants totaling 137,000,000 acres, 35,000,000 acres be-

came Indian reservations and 170,000,000 acres were set aside as National Parks and Forests.

Henry Clay, once remarked before the Senate, "long after we shall cease to be agitated by the tariff, the public lands will remain a subject of deep and enduring interest." That was in 1836 and, for a long time, Clay's prediction has seemed to be hopelessly in error. Though there are still left 200,000,000 acres in the Public Domain, most of it is west of the Mississippi (nearly a quarter is in Nevada), and it is largely barren wasteland.

Mr. Hoover's proposal and, especially his insertion of the word *surface* aroused curiosity and, in the minds of western politicians, renewed some of the excitement of the days when "land office business" was more than a figure of speech. What coal, oil or mineral rights may lie below the "grass root" rights? These are what Mr. Hoover would retain for the Government and, now that he has by indirection suggested these underground rights are worth thinking about, Henry Clay may receive temporary vindication by the attempts to induce Mr. Hoover to yield full rights to the States. If he refuses, the public lands question will probably remain dormant. But, if he does yield, the last of the Government's free land outside of the Territory of Alaska will be disposed of and Clay's prophecy, like many others, given a one-way ticket to limbo.

Engineering Council

JUSTILY APPROVING and disapproving these many public measures and projects, the American Engineering Council continues to make itself heard in Washington. Last month The Review recorded that watchful body's carefully considered protest against the Jadwin "fuseplug" flood control plan for the Mississippi. Since then it has *deplored*, as a certain liberal weekly would put it, the following:

1. The Crampton Bill (passed by the House, defeated by the Senate), designed to exclude everyone except licensed attorneys from practising before the Patent Office. Members of the Council's administrative board pointed out that the bill would prevent engineers from advising clients on technical aspects of patents, characterized the bill as a "law for lawyers," and proposed an amendment permitting engineers and scientists to render technical, nonlegal service in patent applications.

2. The King Bill to provide compulsory licenses for unused patents.

3. The Walsh Bill to require contractors engaged in public works to give certain preferences in the employment of labor.

4. The James-Schneider Bill to prevent the use of stop watches and time-studies in the postal service.

During the same period the Council has *applauded*:

- A. The proposal for the construction of the St. Lawrence seaway, permitting the passage of ocean going vessels from the Great Lakes to the Atlantic. It requested

Mr. Hoover to appoint civilian engineers, both American and Canadian, on the International Board of Engineers.

B. A bill authorizing the employment of civilian engineers for the Air Corps and Ordnance Department.

C. The reconstruction by the engineering profession of the Potomac Canal for the George Washington bicentennial celebration in 1932. This canal was built by Washington to take boats around Great Falls.

D. The Reed Bill authorizing the Secretary of War to lend aeronautic equipment and material to accredited schools, colleges, and universities throughout the United States for use in aeronautical instruction and research.

"THE STORK," A TAILLESS PLANE DEVELOPED IN GERMANY. COSTING \$800, IT FLIES SEVENTY-EIGHT

MILES PER HOUR
WITH AN EIGHT
HORSEPOWER
MOTOR



E. The McLeod Resolution for the creation of a commission to study the causes of and the remedies for business depressions and unemployment.

F. A resolution suggesting a national museum of engineering and industry.

G. Bills creating a safety division in the Bureau of Labor Statistics, and providing for the coordination of the Federal Government's public health activities.

Foreign Aviation

PASSING WEEKS in New York bring new and higher skyscrapers, in Germany new and larger airplanes. The *DO.-X* (Dornier) seaplane which recently took to the air powered by twelve motors and loaded with over one hundred passengers, received justified recognition the world over. Its precursor was the staunch Rohrbach *Romar*, most seaworthy of seaplanes.

Not content with building the largest flying boat, Germans next presented the Junkers *G-38*, the largest of land planes. This craft is appreciably smaller than the Dornier, carrying only four motors totaling 2400 horse-

power. It is seventy-five feet long against the 131 feet of the Dornier, but it is wider — 180 feet against the *DO.-X's* 157. It contains structural novelties, however, profoundly important to future design. The crew, pas-

sengers, and most of the freight and fuel are carried in the wings. Between these enormous flying surfaces is room for thirty-four people to walk about comfortably through the sleeping cabins, dining room, smoker, and kitchen. The plane is capable of making 130 miles per hour.

The Dornier Works announce another flying boat similar to the *DO.-X* which has been ordered by Gar Wood, speed boat racer. Its design calls for four engines, each of 500 horsepower, a span of 102 feet, a length of eighty-two feet, and a passenger capacity of twenty-seven. Another German firm headed by Dr. Edmund Rumpley is proposing a seaplane for transatlantic service capable of carrying 170 passengers and propelled by ten motors yielding a total of 10,000 horsepower.

Another German designer, Alexander Lippisch, working for a minimum rather than maximum size, has developed *The Stork*, a tailless plane, shaped like a caret and propelled pusher-fashion by an eight horsepower engine. Its flying qualities, according to newspaper reports, are astounding, its stability remarkable. Expert judgment on it, however, is not yet obtainable. And finally, to round out an autumn of European progress, comes news of an all-metal fighting plane, the Bristol *Bulldog*. Authority for this derives from the National Advisory Committee for Aeronautics. The

Bulldog is capable of a speed of 172 miles per hour and a ceiling under full load of 31,200 feet. Its entire structural portion is of high tensile steel, designed on the Bristol principles of metal construction.

Monster Dirigible

WHILE GERMANS are finishing their huge land and sea planes, the Goodyear-Zeppelin Corporation in Akron hastens construction for the Navy of the ZRS-4, destined to be the largest lighter-than-air craft. Its gas capacity is to be almost twice that of the Graf Zeppelin, its master ring's diameter equivalent to the height of a twelve-story building, its length more than matching the length of the R. M. S. *Mauretania*.

The Goodyear-Zeppelin Company's President, Jerome C. Hunsaker, S.M. '12, related in The Review of last May the events leading up to this great step in airship design — the acquirement by his company of American rights to Zeppelin patents and the loan by the German firm of its chief engineer and allied key men. At the same time he described plans to place the eight engines of the ZRS-4 in the craft's viscera instead of suspending them as have all other designers. The use of helium gas makes this possible as it does the construction of the airplane hangar for five planes which the ship is to carry.

A comparison of the ZRS-4's dimensions with other airships emphasizes its Pantagruelian size:

	Length	Height	Gas Capacity
Los Angeles	658	104	2,470,000
Graf Zeppelin	776	98	3,700,000
R-101 (British)	709	133	5,000,000
ZRS-4	785	146	6,500,000

The immense hangar and dock, likewise an engineering triumph, in which the ship is being constructed, is pictured and described on page 90.

Airplane Safety

MERE SIZE in airplane design, however, is not the most important thing. The problem of safety demands more study and is harder of solution. A number of American organizations are concentrating on this one factor. The Guggenheim Fund for some time has been financing the study of fog flying and flying blind by instruments and the work done for it by Professor William G. Brown, '16, and Lt. James H. Doolittle, S.M. '24, is bearing fruit. The Fund at the present time is also sponsoring a safe aircraft competition for which prizes totaling \$100,000 are offered to plane designers and builders who submit machines with new and valuable safety features.

The Army Air Corps is likewise conducting experimental work and it recently conducted a successful test with the Sperry Gyroscopic Stabilizer which is designed to keep planes straight on their course in level flight. The successful use of this device would do much to reduce the constant strain imposed upon pilots who are forced to watch a fatiguingly large number of instruments.

The necessity of making pilots more efficient and of relieving them from excessive strain is shown in the results obtained in an investigation sponsored by the Assistant Secretary of the Navy for Aeronautics. It was found that fifty-two per cent of all accidents are caused by errors of pilots, eighteen per cent by power plant failures, thirteen per cent by structural failures, nine per

cent by poor airport conditions, two per cent by inclement weather conditions, two per cent by supervising personnel, and four per cent by miscellaneous causes.

Engineering Congress

ON PAGE 79 The Review is publishing an important article derived from a paper delivered by Professor Dugald C. Jackson before the World Engineering Congress which met during the first week of November in Tokio. During the year The Review will publish other important material presented by notable American engineers before the Congress. Professor Jackson, who is Chairman of the American Program Committee, has made it possible to obtain these papers, and to him The Review and its readers are much indebted.

The manner in which the Congress was conducted redounded greatly to the credit of Japanese engineers. The delegates from all countries were enthusiastic about the warmth of the Japanese hospitality and the evidences of engineering enterprise and progress. About 800 papers were presented before the Congress, the largest percentage of which were written by Americans. The various phases of engineering discussed in these papers and those at the small sectional meeting of the World Power Conference, held simultaneously, make an important and valuable contribution to the advancement of engineering.

Vanishing Scourge

ALTHOUGH a recent estimate of the United States Public Health Service indicates that but 306 of the 1,200 supposed lepers in this country are being treated in the Government leprosarium at Carville, La., the decade since the War has seen vast strides in the conquest of this disease. Until comparatively few years ago the aphorism, "Once a leper, always a leper," was sufficient to destroy all hope in the afflicted and to bring consternation to family, friends, and community.

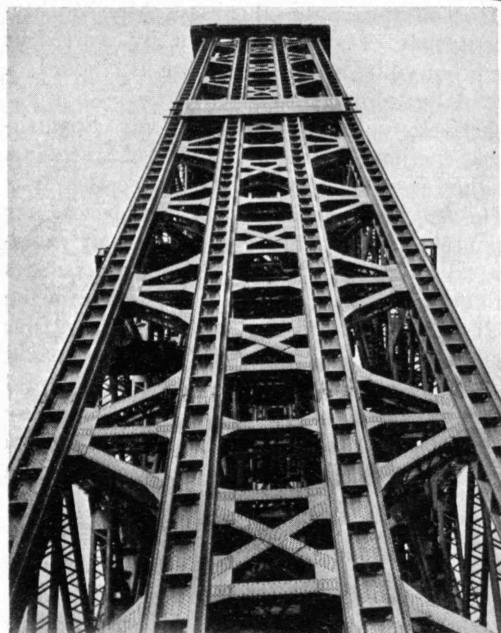
This great scourge of mediaeval Christendom was endemic from earliest times in the delta and valley of the Nile, yet barely fifty years ago came the discovery of its causative agent, *b. leprae*, by the Norwegian scientist, G. Armauer Hansen. His work cleared the way for the removal, from the sufficiently evil name of leprosy, of a number of similar but essentially different diseases; and the diagnosis of leprosy today is rarely made, even by an experienced physician until the leprosy bacillus has been found in the suspect.

Since 1910 there has been a new and more hopeful outlook on the treatment of this ancient affliction, at least in its earlier stages. Constructive effort in the United States did not crystallize until February, 1917, when Congress enacted legislation and provided funds to set up the leprosarium in Louisiana. But in other parts of the world the problem was more acute and the fact that the great majority of the two to three millions of the world's lepers were in tropical and subtropical Asia and Africa where the disease thrives in the hot, damp climate, led to much fruitful study and research.

Numerous suggested remedies, having failed to fulfill their early promise, only the Indian drug, chaulmoogra oil, was known to have some power of retarding the



Ewing Gallaway



PROGRESS ON THE HUD-
SON RIVER BRIDGE, THE
WORLD'S LONGEST SIN-
GLE SPAN. ITS TOTAL
SPAN IS 3500 FEET, THE
HEIGHT OF ITS TOWERS
650 FEET



progress of the disease. Taken orally its use was difficult because of its nauseating properties, but slightly better results were obtained by Victor G. Heiser in the Philippines by intramuscular injections. This, however, was painful and few patients could submit to it, even if willing. In 1916-1917, L. Rogers injected the soluble salts of the fatty acids of chaulmoogra and other oils. Later Dean and Hollman at Honolulu introduced the practically important modification of using intramuscular

injections of ethyl esters in the place of the more troublesome intravenous ones of the sodium salts.

The results of the last four recorded years in Hawaii have been that the cases discharged numbered fifty-three per cent of the 399 admissions. The number of lepers is being reduced at a rate which will nearly solve Hawaii's problem within about twenty-five years. In India a new substance, sodium hydrocarbate, has been tried and found easy to administer, cheap, and very effective.



BOOKS



Imperialistic Machines

THE IMPERIAL DOLLAR, by Hiram Motherwell. \$3.50. 310 pages. New York: Brentano's.

THE effect of the advance of technology upon world politics and world economics, and especially upon America's share in them both, is the theme of this new book of Mr. Motherwell's.

"The common jibe that America is 'machine made,' he says, 'is historically true.' But he admits the fact with equanimity, since he holds that the imperialism which has resulted from this reign of the machine is in the main of a beneficent sort that makes for the general good of the world as a whole. America's imperialism is of a new type. It is the work not of politicians but of engineers, however unconscious the engineers themselves may be of that fact.

"In short, the American Empire which built its foundations in three decades following the Spanish-American War was not the work of imperialists. It was the work of the machine, grinding out wealth in a frenzy of newly discovered vigor. One might almost say it was a blind force of nature. It was not the politician who guided the process. At almost every single step the politician looked on puzzled and half-helpless, often resorting to some panic-stricken half measure which only placed an obstacle in the path of the empire. For the American people did not know what was taking place."

One naturally asks why the machine has not affected European empire-building in a similar way. Mr. Motherwell's answer is to point out the amazingly happy coincidence between the European industrial revolution and the American political revolution. "All unconsciously Washington was collaborating with Hargreaves and Arkwright and Watt. While they were creating the modern machine, he was creating the terrain on which it would eventually be free to function to the utmost capacity. The two revolutions were destined to merge into one great process, the process today known as Americanism." In Europe, the machine revolution could not go so far because innumerable tariff barriers reduced markets and interfered with the free flow of raw materials.

Unhampered in America, the machine first satiated the American market and then began to force its overplus on the world market, supported by a low production cost which the rest of the world could not match.

A series of memorable dates mark the stages of the process. By 1875, the United States was exporting more than it imported. By 1896, there were large sums left over for foreign investments, and the United States was on the way to becoming more industrial than agricultural. Gradually, the idea grew up that not only must American investments in the Caribbean and adjoining countries be encouraged, but that pretexts for European interference must be ended. Hence "the policy of protect-

ing and forcing dollar investments not so much for their own sakes as for the sake of squeezing out European investments, new and old."

Then came the World War. Europe, frantic for American goods, re-sold to Americans hundreds of millions in American securities. America diminished its own debts and increased credits. "At some time in the year 1916, the two elements met, and then crossed. The United States became a net creditor toward the world." America was committed once for all to creditor imperialism.

And a good thing, too — according to Mr. Motherwell. For he holds that in the long run imperialism of this sort necessitates promotion of the general good; and that America will have to seek to increase foreign markets by increasing foreign purchasing power, precisely as we have increased domestic markets by increasing domestic purchasing power. "Those who would explain modern imperialism must take into consideration this fact: that it cannot long prosper by taking things from others; it must eventually seek to sell things to others. It must in its own selfish interest seek to provide others with purchasing power."

Hence the benefits of American imperialism to the world at large — benefits which the world seems singularly slow to appreciate. But, says Mr. Motherwell, "Nations may occasionally profit by wars, but empires can profit only by peace." Here is, indeed, a supreme benefit. But can we confer it?

Mr. Motherwell will not convince any Spanish-Americans that the imperialism of the United States is a good thing, though some of them may agree that it is inevitable. He will not convince many Europeans, nor will he convince all Americans. But this is not necessarily adverse criticism of his book. Whether it persuades the reader or not, it makes a good case for one view of the matter. It will teach every reader a good many things that he needs to know, and its urbanity, intelligence, and sincerity will make the process agreeable. A very useful and important book, which ought to be read by every American who concerns himself with foreign policy — especially the professional baiters of their own government.

JOHN BAKELESS

Travel Amenities

LOAFING THROUGH AFRICA, by Seth K. Humphrey, '98. \$5.00. 376 pages. Philadelphia: The Penn Publishing Company.

MR. HUMPHREY is a globe-loafer of experience, prudence, and foresight. Besides, he can talk entertainingly about what he has seen. If you have ever met him, or have heard him lecture, it is sufficient to know additionally that in his books the sprightly anecdotes and sage conclusions lose nothing by transference to the printed page.

"Loafing Through the Pacific," his previous travel book, received notice in these columns back in November, 1927. It has now been reissued uniform in format with this newer volume on Africa. This is well, for the African one is much more adequately dressed than the first edition of the Pacific book, its photographs are reproduced better (including the one opposite page 238, which Mr. Humphrey said he took for "her beautiful eyes," though they do not show in the picture), and it has nice, helpful end-paper maps as do most good travel books. Possibly the latter improvement may have been due to a gentle hope expressed by this reviewer two years ago.

The entry into Africa was at Cape Town from which point he struck out north toward the Equator, stopping at Kimberley in the diamond country, Johannesburg to check the gold supply, and historic Pretoria and Mafeking. At Victoria Falls on the Zambesi River, beyond which nobody goes unless they have business — "except once in a while a man who has no business to be going beyond —," he paused three weeks for connections up into the Belgian Congo, to Elizabethville, Kabalo, and Lake Tanganyika. This, the longest fresh water lake in the world, he crossed, then proceeded to Tabora, which the Germans laid out to be a town of 50,000 and which had when he was there a population of 134 white people.

From Tabora northward he journeyed by a succession of motor trucks to Victoria Nyanza. Three days eastward across that lake brought him to Kisumu, after a day at Jinja, where the lake waters spill over Ripon Falls and become the White Nile. Hippos play in Lake Victoria, and black schools of fish sport in the Nile within a half-mile of each other. Southeastward he continued, now by rail, through Nairobi, capitol of Kenya's big game paradise, to take ship at Mombasa and go down the east coast, putting into various ports like Beira in Portuguese East Africa, Durban in Natal. At Durban he transhipped to a freight boat, continued on southward, rounding the Cape of Good Hope and changing direction to the northward to Walvis Bay. Then he left Africa, consigning himself to a thirty-one day voyage on a freighter back to America via Trinidad.

"Browsing among peoples" is the way Mr. Humphrey derives his chief satisfaction in rambling about. To probe their inward feelings, he assumes the attitude of a temperamental dissembler and his premeditated and seemingly ignorant and ingenuous quizzings have provoked honest retorts from Manila to Zanzibar, including way stations as unlike as Los Angeles and Mwanza.

Most of his loafings, at least those of which he has submitted an account for public consumption, have been in the tropics. There, he succinctly says, nobody hurries and "there are delightful intervals of nothing to do." But, he continues, not everything in the tropics is delightful, and the "usual conception of the tropics as a place revelling in fruit and vegetables is all wrong. . . . Almost everything on a well-furnished table anywhere near the Equator has to be shipped in from the temperate zones. . . . The tropics generally are the home of the tough chicken and the tin can." Then, too, in Africa the tropics are the stamping-grounds of flies such as tsetses, anophele mosquitos, and spirillum ticks — the latter being the carriers of relapsing fever, one of Africa's worst — with quinine as one of the necessities of life.

In his travels, as he reports them, there is lacking any indication that Mr. Humphrey ever loses his temper even though his baggage may go astray at a place like Albertville, Lake Tanganyika's west-side port, — darkest Africa where is the first hotel in "900 slow-moving miles." He says, "It doesn't do to get excited in the heat of Equatorial Africa. Otherwise I might have got excited. As it was, my calm but earnest demeanor as I tore along the lake front, losing weight from every pore, gained for me sympathetic and advising friends." Just as the steamer's whistle blew there came "two mature blacks with my bags aloft, hastening for the boat. . . . Then I took a bath, and smoked out the incident for good. In the tropics — and elsewhere, for that matter, only in a less degree — one who harbors annoyances gone past trifles dangerously with his health."

This philosophy apparently accounts for his reported imperturbability under equally trying circumstances. If a rikisha driver takes him by mistake to an opium factory, or worse, at Macao, he blandly says drive on, if Pango-Pango's "Astoria" is a false alarm, he chuckles and only wishes the lone sheet were longer so he would not have to see the mattress; if the Belgians, crafty fellows, give him a one-day pass to see the mines and smelting works of the *Union Minière du Haut Katanga*, and that day happens to be King Albert's birthday on which everything closes down, it is their loss and not his; if a truck driver expects his truck to go through anything a young gazelle could jump over, and consequently jams his gears so hard he strips the differential, and if this happens in an African swamp seventy-five miles from the nearest garage — Mr. Humphrey accepts the situation as but another chance to gather more data out of one more exasperation.

Since this African book, which has been in preparation two years, has now emerged with credit to author and publisher, it is to be hoped that the former projects further foreign loafings. He owes it to the armchair globe-trotters he has created and this reviewer recommends South America next, or India, or, better still, Soviet Russia. Somehow, the idea of Seth Humphrey browsing among the Volga boatmen, safely armed, of course, with a letter of credit from Senator Borah, has infinite literary possibilities.

H. E. L.

Snobless

THE FINE ART OF READING, by Robert E. Rogers. \$2.50. 299 pages. Boston: *The Stratford Company*.

NO man who completes his day's reading with the daily paper, no student who is satisfied with doing only the required reading, no adult who buries himself in the avalanche of modern novels, will know or care about this book. But for the reader who wants to read more, and wants to know what to read and how to read it, this will be a boon. For Professor Rogers has a mental bookshelf worthy of any man's envy and from it he draws, in the most engaging manner, pages or phrases to give point to his subject. The same ease and charm of his conversation which make his lectures, chiefly delivered impromptu, so widely attended and enjoyed are retained in the pages of "The Fine Art of Reading." Here is far greater claim for publicity than Professor Rogers's

address to the Senior Class of Technology in June, 1929, which has been the source of so many tirades and editorials.

In short, pungent chapters he tells the reader what to look for as he reads, taking in turn the varied standpoints of the teacher, the reader, the critic, and the writer. But so skillfully has he done it that he has avoided all that is pedantic and ponderous, all air of the text book. Not even errors in quotations wrongly attributed or misspellings of book titles can deviate the stream of his easy-flowing prose.

C. C. C.

Tough Hombres

VIGILANTES, by Hoffman Birney. \$3.50. 346 pages. Philadelphia: *The Penn Publishing Company*.

THE TRUTH ABOUT GERONIMO, by Britton Davis, edited by Milo M. Quaife. \$4.00. xvii+253 pages. New Haven: *The Yale University Press*.

FALL and winter publishers' lists indicate a bull market for tales of the Old West, literature of a period abounding with incidents of blood-letting and elemental justice, inevitable accompaniments of the westward moving course of empire. Its characters are dubious fellows, road agents, rustlers, gamblers, and murderers; intermingled with the usually more desirable pioneers, miners, stage drivers, trappers, soldiers, cattlemen, sheriffs, and Indians. The Indians really require separate mention; they were apt to be good when on the reservation, but when they left it they were pretty sure to be bad.

Mr. Birney's book puts together the story of the rise and fall of Henry Plummer and his gang of outlaws in and about Virginia City, Mont., in the early Sixties. Plummer, unquestionably a most exceptional individual and one of the most distinctive personalities that can be found among the bad-men of Montana, was sheriff of the Bannack district and was at the same time, a road agent. He, and most of his men, were hanged through the activities of the members of the law-enforcement association — the Vigilantes of Montana — who banded together December 23, 1863, with the words, "Men, do your duty!"

Lt. Davis was with L Troop, 3rd U. S. Cavalry, during the campaign of 1885-1886 against the Apaches under Chief Geronimo and, with the help of Mr. Quaife, he has set down his recollections. "In this campaign thirty-five men and eight half-grown or older boys, encumbered with the care and sustenance of 101 women and children, with no base of supplies and no means of waging war or of obtaining food or transportation other than what they could take from their enemies, maintained themselves for eighteen months, in a country 200 by 400 miles in extent, against 5,000 troops, regulars and irregulars, 500 Indian auxiliaries of these troops and an unknown number of civilian auxiliaries." Finally Geronimo was forced to surrender, he and his followers being transported to Florida, there to be confined in army forts at Pensacola and St. Augustine.

The present volumes are but two meritorious examples of current contributions to the bibliography of the Old West. "Famous Sheriffs and Western Outlaws," by Wil-

liam M. Raine (Doubleday, Doran) or "The Day of the Cattlemen," by Ernest Staples Osgood (University of Minnesota Press) might have been selected. Or, two other books from the Yale University Press would have served: Captain James B. Gillett's "Six Years With the Texas Rangers" and Mr. Quaife's own "Yellowstone Kelly," the memoirs of General Miles's chief of scouts during the various campaigns against the Indians in 1876.

Conditions may still be primitive in isolated sections, sparsely settled because of climatic conditions, but law and order today appear firmly rooted on the old frontier. One is more likely to run into a bandit in the bootlegger's urban hunting grounds at the south end of Lake Michigan. The point is, after all, the Old West has passed; therefore it is commendable that its story is being plentifully recorded on paper while eye-witnesses are yet alive, for its contemporary records are meager or non-existent.

H. E. L.

Brief Reviews

THE AMAZING BENJAMIN FRANKLIN, compiled and edited by J. Henry Smythe, Jr. \$3.00. xix+296 pages. New York: *F. A. Stokes Company*.

THIS farrago of forty-five tributes to Franklin, all from different sources and treating of different facets of the man, seems hardly worth the candle. Few of the contributors (among them Hoover, Hughes, Henry S. Pritchett, Alexander Millerand, Andrew Mellon) present any new material. The Philadelphia chapter of the Sons of the American Revolution, the organization sponsoring the book, could have rendered a much greater service to Franklin's name had it spent its money in promoting historical research into Franklin's life and times. His memory does not need lip service that merely gilds refined gold.

THIS AVIATION BUSINESS, by Ernest W. Dichman. \$3.50. xiv+274 pages. New York: *Brentano's*.

NEITHER impressive nor sympathetic are the first four chapters which could have been made a fascinating though abbreviated history of aviation. A newspaper necrology could scarcely lack more of the human element; names, flights, and failures are so prosaically recorded. It is easy enough for us, looking back over the short period that spans aviation, to recognize blunders and misconceptions of the pioneers, but it is harder for us to understand and appreciate their courage and persistence in mastering the air. Refreshing, however, is the limitation of the account of Lindbergh's Paris flight to one paragraph, keeping him thus in proper proportion to the achievements of other fliers.

But the author aims, not to write a history, but to use history to clarify his explanation of present flying conditions which are still far from satisfactory, and to forecast a future of flying that will be more nearly perfect. This he does in a sane and practical fashion that is worthy of praise. Safety is an element that Mr. Dichman cannot overstress, and his illuminating chapter on "Aviation as a Career" should be read by every boy with aeronautical ambitions. We need more books that can be honest in this fashion.



Tax Settlement

REALIZING that the benefit of having educational institutions in the city limits of Cambridge might be overbalanced by those educational institutions withdrawing more and more property from the tax list, the Institute, Harvard, and Radcliffe College have entered into an agreement with the city to pay taxes upon certain of their holdings. Only a part of the Institute's property is affected, five acres approximately of the thirty west of Massachusetts Avenue are to be taxed under the agreement. The Institute will pay, in round numbers, \$6,000 per year tax.

When one realizes that Cambridge, with an area of six and one-half square miles, finds herself with one and one-half square miles of her land occupied by schools, the anxiety of the city fathers can readily be understood. Constantly expanding, as the institutions are, the point might some day be reached when they own so much property as to make the tax rate in the remainder of Cambridge prohibitive.

Faculty Changes

SINCE the November number of The Review went to press, thirteen changes in the Faculty have been announced. C. Fayette Taylor, Professor of Aeronautical Engineering, who came to Technology in 1926, has been appointed Acting Head of the course in Aeronautical Engineering to take the place of Professor Edward P. Warner, who resigned last June to become Editor of *Aviation*. Lt. Col. Robert C. Eddy, since 1927 Executive Officer of the Department of Military Science and Tactics, becomes Head of that Department vice Colonel Harold E. Cloke, who has been transferred to Honolulu.

Shatswell Ober, '16, since 1922 Research Associate in Aeronautics, has been appointed an Associate Professor of Aeronautical Engineering and Thomas R. Camp, S.M. '25, who has been chief designing engineer with Alexander Potter in New York, joins the Faculty as Associate Professor of Sanitary Engineering.

There are three new appointments to Assistant Professorships of Military Science and Tactics: Majors Robert Arthur, Peter H. Ottosen, and Lt. Clarence L. Adcock. Major Arthur, who has been Librarian of the Coast Artillery School at Fortress Monroe, becomes

Executive Officer of the Department; Major Ottosen and Lt. Adcock assume charge of the Coast Artillery and Engineer units respectively. Previously, from 1920 to 1924, Major Ottosen served on detail at the Institute in the Department of Military Science and Tactics.

Major F. S. Winslow and Lt. A. T. W. Moore, of the Department of Military Science and Tactics, and Lt. R. D. Thomas, U.S.N., have resigned, as did Colonel Cloke, because of service transfer.

Alexander S. Jenney, '83, has been forced to resign from the Faculty because of poor health. Professor Jenney, who first joined the staff in 1914, giving the courses in Office Practice in the Department of Architecture, became an Assistant Professor of Architecture in 1927. During the past year his health had been failing but it was expected he would recover sufficiently to resume active teaching, but, unfortunately, his continued sickness made his resignation imperative. Dr. Per K. Frolich, '23, who last June was appointed Associate Professor and Assistant Director of the Research Laboratory of Applied Chemistry, has resigned to enter the employ of the Standard Oil Company of New Jersey.



C. E. MEES, VICE-PRESIDENT OF THE EASTMAN KODAK COMPANY, WHO SPEAKS TO THE NEW YORK TECHNOLOGY CLUB ON DECEMBER 2

Lectures

YEARLY THE INSTITUTE supplements its own instruction with lectures given by notable and learned visitors. It likewise contributes to the public weal by presenting lectures

given by members of its own staff to the outside public. Of the former type, the Institute has many, but its best known series is that established by John E. Alfred and designed to acquaint seniors with successful men and methods from the field of practice. Two lectures in this series have already been announced: on December 6, Ralph Adams Cram, distinguished architect and mediævalist, speaks on "Building a Great Cathedral"; and on January 17, C.-E. A. Winslow, '98, Anna M. R. Lauder Professor of Public Health in the Yale School of Medicine, speaks on "Health Conservation, A Problem in Citizenship."

The Society of Arts series given by members of the Institute staff for the public include: Frederick K. Morris, Associate Professor of Structural Geology and former geologist of the Roy Chapman Andrews Asiatic Expedition, speaking on "A Geologist's Travels in the Gobi Desert" (December 15); John W. M. Bunker, Professor of

Physics and Biochemistry, speaking on "From Molecule to Man" (January 12); Robert S. Williams, '02, Professor of Physical Metallurgy, lecturing on "The Romance of Metals" (February 9); and Maurice deKay Thompson, '98, Associate Professor of Applied Electrochemistry, discussing "Electricity and Its Chemical Effects" (March 9).

New York Club Dinner

SPEECHLESS DINNERS, while not originated by The Technology Club of New York, have been wisely chosen by it as a part of its program to draw Technology men together and to contribute to their gaiety. In the place of speeches they have substituted "demonstrations." Last year Sergius P. Grace, Assistant Vice-President of the Bell Telephone Laboratories, presented a demonstration lecture on sound and its transmission.

This event was so successful and well received that the Club this year again holds an annual dinner concurrently with the arrival of this Review in the mails on December 2. The scene is the Hotel Roosevelt, the old Waldorf-Astoria having succumbed to the building wrecker. The demonstration this year is to be presented by C. E. Mees, Vice-President and Director of Research of the Eastman Kodak Company, and his subject will be "The Formation of the Photographic Image." To illustrate his lecture he will use the new Eastman Kodacolor movies.

The Club is insistent upon informality and it emphasizes that the amenities of life and a chance to renew friendships will constitute the most important business of the evening.

Bulletin Number 23

NOT even the initial teeterings of the stock market kept off late October front pages headlines about the long-awaited report on "American College Athletics," which the Carnegie Foundation for the Advancement of Teaching now has available for free distribution. Since 1926 Dr. Howard J. Savage (who will be remembered as the author of "Bulletin Number 18" on games and sports in British schools) and his associates have been engaged on the field studies and the compilation of data for this "Bulletin Number 23." As was to be expected the press found "Number 23" better copy for, in its more unsavory details, the present report gets down close to brass tacks on the subsidization and recruiting of athletic timber by the colleges.

But, important and intriguing though the manifold ways to garner and support champions to make winning teams may be — and prevalent though such activity may be throughout the land — Dr. Savage's 400 pages present the complete story of American and Canadian intercollegiate athletics. He gives the historical background, the development of the modern amateur status, the varying means for the administrative control of athletics, the miscellaneous existing relationships of faculties, students, alumni, and coaches to the system. The hygiene of athletic training, the press and its emphasis on athletics, the results of athletic participation, and its values are discussed. On the future, "Bulletin Number 23" is an optimistic document. To be available next month there is

a supplementary volume entitled "The Literature of American School and College Athletics."

One paragraph by Dr. Savage needs quoting in these columns: "The notion that intercollegiate competition is impossible, or at least impracticable, without subsidies is disproved by the fact that at twenty-eight of the 112 colleges and universities visited for the enquiry no evidence was found that athletes were subsidized by any group or individual." Technology's name appears as one of the twenty-eight.

After such a compliment it is ungracious to point out that Dr. Savage is in one place at fault — or that he is premature, perhaps. However, the report says (page 93) of swimming pools: "Among the most inviting may be mentioned those of . . . Massachusetts Institute of Technology. . . ." Can this be by indirection a tribute to the pool of the Boston Y. M. C. A. where the Institute swimming team used to practice, or to the allurements of the newer pool of the University Club of Boston which the team now uses?

141st Council Meeting

THE business session of the Alumni Council held on the evening of October 28 following the usual dinner in Walker Memorial came in like a lamb and went out like a lion. This change from halcyon to stormy weather was precipitated by a discussion of the by-law changes embodying the new plan for Corporation Term Membership selection as presented by a sub-committee of the Council last spring. Before Samuel C. Prescott, '94, the presiding officer, vice Harold B. Richmond, '14, at that time ill, opened the discussion on term membership selection, the Council had heard from two visitors, Francis J. Chesterman, '05, of Pittsburgh, a Vice-President of the Association, and Stuart R. Miller, '07, of Cincinnati. Both of these speakers took as their text the need for closer relations between the Institute and its outposts.

In comparison, the time between these two talks and the opening of the term membership discussion was a doldrum-like interlude. Reports were heard covering the activity of the Executive Committee, of the Secretary, and of the Treasurer of the Association. All of these reports, in substance pictured the Association in a prosperous and solid condition. During the interlude Dr. Prescott reminded the Council of the deaths during the summer of Henry F. Bryant, '87, Walter B. Snow, '82, Edward W. Rollins, '71, and Wallace C. Brackett, '95. The Council voted that a committee be appointed to prepare resolutions on the deaths of these men.

It is not possible here to give even a gist of the debate upon Term Membership by-law changes which followed. The upshot of the entire discussion fortunately makes this unnecessary, since it was voted that a committee be appointed to prepare a statement of the arguments in favor of and against the adoption of the proposed changes in the by-laws and to submit them to the members of the Association for a vote; and additionally, that a second ballot be submitted to those of the clubs who may be persuaded to vote upon the question corporately as clubs. The Council further voted that a committee be appointed to study methods for maintaining closer contacts between the Association and the Technology clubs.



ADVERSARIA



Rescued

BY cowboys, LT. ALBERT F. HEGENBERGER, '17, co-pilot with LT. LESTER J. MAITLAND in the first crossing of the Pacific to Hawaii by air; from being attacked by a bull when forced down near Clovis, New Mexico.

Honors

❑ TO BRADLEY STOUGHTON, '96, Professor of Metallurgy and Head of the Department of Metallurgy at Lehigh University; the Grasselli Medal for 1929 for his notable paper, recently prepared, on "Light Structural Alloys."

❑ TO GEORGE F. SWAIN, '77, Professor of Civil Engineering at Harvard University, the Benjamin G. Lamme Medal of the Society for the Promotion of Engineering Education. Dr. Swain is the first to receive this new Medal which, henceforth, will be awarded annually in accordance with the will of the late Mr. Lamme. The bestowal to Dr. Swain was for his contribution to the advancement of the art of technical training.

Appointed

❑ LEWIS H. KUNHARDT, '89, to be President of the Boston Manufacturers Mutual Fire Insurance Company. He succeeds Joseph P. Gray, '77.

❑ FREDERIC H. FAY, '93, Chairman of the City Planning Board of Boston and Chairman of the Board of Zoning Adjustment of Boston; to succeed Henry I. Harri-man as a member of the Metropolitan Planning Board of Boston.

❑ HORATIO M. PARKER, '94, to be Vice-President of the International Association of Dairy and Milk Inspectors.

❑ CHARLES B. PAGE, '99, to be President of the Steam and Combustion Company of Chicago.

❑ KATHARINE BLUNT, '03, of the faculty of the University of Chicago; to the Presidency of Connecticut College for Women.

❑ RICHARD D. GATEWOOD, '05, for the last nine years in charge of the United States Shipping Board Bureau of Maintenance and Repair; to be General Manager of the United States Salvage Association in New York.

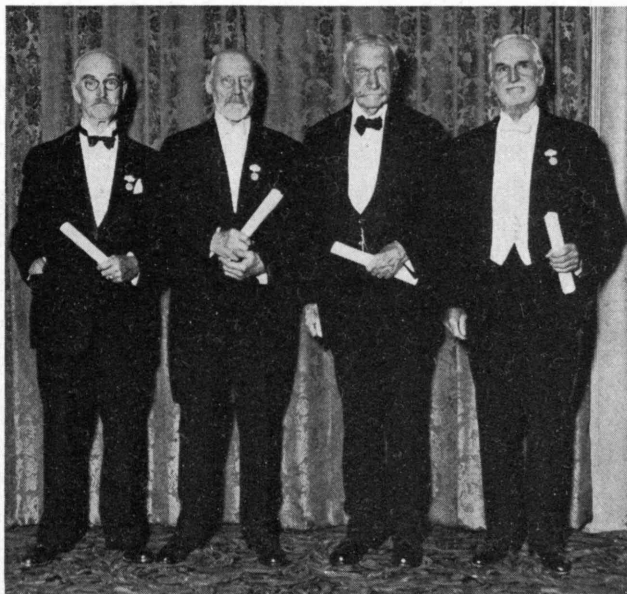
❑ ALBERT E. WIGGIN, '07, to be Metallurgical Manager for the Montana plants of the Anaconda Copper Mining Company.

❑ WILLIAM D. MILNE, '08, to be Manager of the New England Division of the Eastern Underwriters Inspection Bureau, which position has been jointly held by GORHAM DANA, '91, and MILTON F. JONES, '94. Messrs. Dana and Jones, who have resigned as managers, remain with the organization.

❑ ROBERT INSLEY '19, to be Vice-President and Chief Engineer of the Continental Aircraft Engine Company.

❑ ARTHUR A. BLANCHARD, '98, Associate Professor of Inorganic Chemistry at Technology; CHARLES A. KRAUS, '08, Professor of Chemistry at Brown University; and MILES S. SHERRIL, '99, Professor of Theoretical Chemistry at Technology; to be Visiting Lecturers at Harvard University.

In the Faculty there are to be one new full Professor, two new Associate Professors, and three new Assistant Professors. These appointments have been announced since the November Review together with the resignations of six members of the Faculty, (see page 97).



Wide World

LEFT TO RIGHT: JAMES W. NEILL, W. H. RADFORD, ROBERT H. RICHARDS, '68, AND HENRY D. HIBBARD, '77. IN OCTOBER THEY WERE PRESENTED WITH THE AMERICAN INSTITUTE OF MINING ENGINEERS' LEGION OF HONOR DIPLOMAS, DENOTING FIFTY YEARS OF MEMBERSHIP

Purchased

For the Boston Museum of Fine Arts, a sixteenth-century Gothic tapestry which used to hang in the private chapel of Knole, the Kemp residence of Lord Sackville; by Robert Treat Paine, 2nd, '81. Reported price \$250,000.

Deaths

The Review is very happy to correct the erroneous report, received last month and published here, of the death of FREDERICK W. SWANTON, '90. He is very much alive and actively at work in the Patent Office in Washington.

Since the last issue, reports have come to The Review of the decease of the following:

❑ ARTHUR W. TEMPLE, '75, on October 17, 1927. He was in the real estate business in Reading, Mass. See the Class Notes for 1877.

❑ WALTER EUGENE FROST, '81, on June 24, 1928. Previous to his death he was a director of the Frost Coal Company in Dorchester, Mass.

☐ FREDERICK PRESCOTT KENDALL, '81, on March 23. His business interests in Portland, Ore., included the American Can Company of which he was general manager, and the Sanborn Cutting Company, of which he was Vice-President.

☐ FRANK TENNEY, '83, on October 5. Before his retirement he had been assistant to the Vice-President of the Bethlehem Steel Company.

☐ ALEXANDER HAMILTON TWOMBLY, '87, on June 26, after a long illness, at his home in Summit, N. J.

☐ CHARLES PORTER SMITH, '87, on July 14, after an illness of three weeks, at his home in Methuen, Mass.

☐ JAMES THORNTON GREELEY, '87, on August 29. He had been a physician and surgeon in Nashua, N. H.

☐ WALTER CLARK FISH, '87, on September 8. He had been works manager for the General Electric Company in Lynn, Mass.

☐ ROBERT WILSON BISSELL, '91, on January 18. Formerly he was general manager for the Pittsburgh Steel and Chemical Company.

☐ HARRY FAY ROACH, '93, on July 28. He was an architect, practising in St. Louis, Mo.

☐ STEPHEN LOVEJOY BREED, '93, on September 15. He was a lawyer and real estate dealer in Lynn, Mass.

☐ JOHN DOVE, '95, on August 4, at Litchfield, Conn.

☐ GEORGE SEWARD HUME, '99, on June 3. He was a member of S. B. Hume and Son of Eastport, Maine.

☐ REUBEN WILFRED BALCOM, '00, on October 17. Previous to his death he was principal chemist in charge of the food control division of the food, drugs, and insecticide administration of the United States Department of Agriculture of Washington, D. C.

☐ FREDERICK JAEGER, '09, on July 21. At the time of his death he was associated with the Naval Powder Factory at Indian Head, Md.

☐ MORRIS LEONARD CAUST, '18, on September 5. He had been a chemical engineer with Tileston and Hollingsworth Company of Boston.

☐ OLIVER VANPATTEN SMITH, '21, on October 1. He had been associated with the Gillette Safety Razor Company in Boston.

Elected

To be President of the Social Research Council, EDWIN B. WILSON, from 1917 to 1922 Head of the Institute's Department of Physics and now Professor of Vital Statistics in the Harvard School of Public Health.

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VISITING COMMITTEE REPORT

Covering the Recent Meeting of the Visiting Committee for the Institute's Department of Biology and Public Health*

THE Department of Biology and Public Health has had a year of interesting development, characterized by enlarged registration in the undergraduate years, healthy increase in the graduate students, and greater opportunities to carry on research work of important character, both in pure science, and in cooperative effort with organizations seeking to improve or establish scientific work. From the standpoint of registration the Department is larger than ever before and all indications point to continued growth, and, if the demands and opportunities can be satisfactorily met, to increasing usefulness in the broadening fields.

Undergraduate Work. The work for undergraduates has continued in the two divisions or options of Public Health and Industrial Biology, although these are alike throughout the first two years. Through monthly staff meetings, the professional courses given in the Department have been thoroughly discussed as to content and method, and unified and coordinated in a gratifying degree and, as a result, special attention has been given to sound presentation of the fundamental principles of the biological sciences. It is the belief of the Department, and this belief is concurred in by your Committee, that the first two years should be devoted largely to general education, to basic courses in the sciences — chemistry, physics, and biology — to mathematics, and to English and economics. The students are then better able to attack their professional work with broader and more mature vision.

The so-called Public Health Option continues the insistence on what may be called fundamental biological subjects, coordinating these with the special applications needed in the public health laboratory, the various aspects of official health administration, and to sanitation

*This Committee includes William H. Bovey, '94, Minneapolis; Dr. Francis H. Williams, '73, W. Cameron Forbes, and Payson Smith, all of Boston.

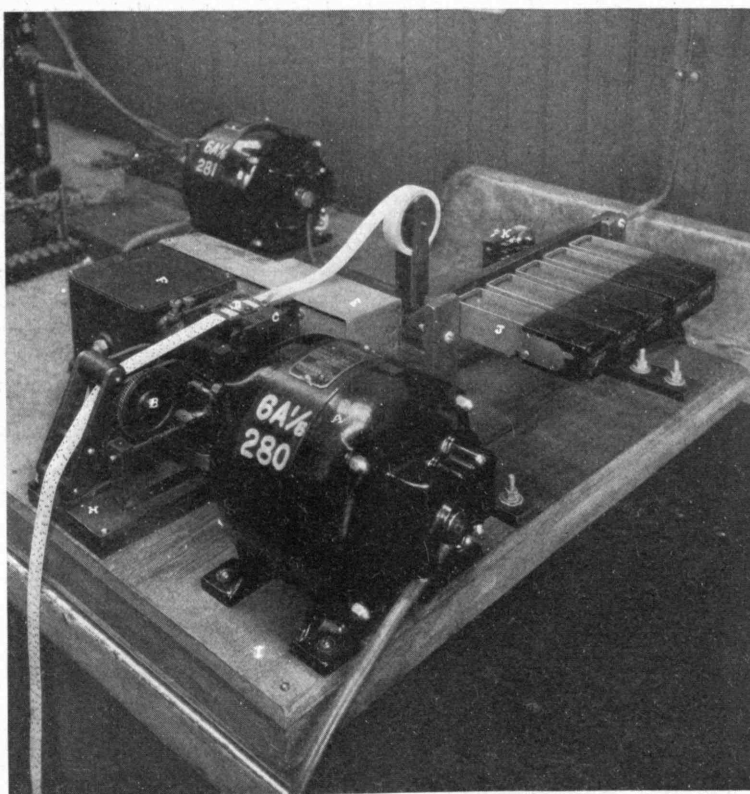
and hygiene in industries employing many workers. This program is also especially well adapted as preparation of those who intend to enter medicine as a profession, and we believe should be given greater publicity in this respect.

The option in Industrial Biology requires a similar thoroughness in those branches of biology, bacteriology, and biochemistry which underlie the food, fishery, and fermentation industries, with concurrent courses in the technology of these industries. This division of the Department shows a healthy growth, and we are happy to say the graduates are meeting the approval of the industries employing them.

A new option in Public Health Engineering will be offered at the beginning of the next academic year, the purpose of which is to give a more comprehensive combination of work in biology, bacteriology, sanitation, and public health administration with engineering and thus to meet the requirements now being made for men who can enter administrative positions as state health engineers, the U. S. Public Health Service and in the service of the international organizations engaged in health work. We hope that this will attract a group of students who will look forward to administrative service, but the

program is strong also in the essential engineering training required in such activities as water supply, milk pasteurization, sewage treatment, waste disposal, drainage, and mosquito extermination, and the many problems of the modern public health engineer.

Graduate and Research Work. It is very gratifying to report that the number of graduate students has been larger than usual. Four men have completed requirements for the Ph.D. degree during the past year. It is evident that the graduate work is on the increase, and special provision must shortly be made to give such students



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WORK TABLE IN SPECIAL TEST ROOM FOR STUDYING THE EFFECT OF REST PAUSES AND OTHER CHANGES IN WORKING CONDITIONS. THE TESTS ARE BEING CONDUCTED BY WESTERN ELECTRIC WITH A MEMBER OF THE DEPARTMENT'S TEACHING STAFF ACTING AS CONSULTANT

adequate room and facilities for their investigations. The Department has been especially fortunate in having space in the Infirmary allotted to it temporarily to provide for some of this work and for some of the industrial researches. Laboratories especially designed for uninterrupted research work are needed, and it is hoped will soon be available. More research assistants are also needed. With continued increase in students, it will also be imperative to have some enlargement of teaching staff in the very near future.

Sedgwick Memorial Laboratory. Plans have been drawn and preliminary steps taken to attempt to secure a new building as a memorial to Professor William T. Sedgwick, to whom the Department owes its prestige and who for nearly forty years was its devoted head. The departmental staff and committees of graduates are now working on plans to carry out this project, which it is hoped will

receive cordial support from organizations and individuals of means who have an appreciation of Professor Sedgwick's personal service and that of the Department. The proposed plan involves a new building adequate to house the teaching research laboratories and an endowment which will guarantee the support of special teaching and of research work in pure as well as applied biology. If, as hoped, such a development is soon to become a reality, it will necessarily bring with its enlarged opportunities the demand for increase in staff, but it will also supply better coordination with related departments, improved teaching facilities and a great stimulation of investigation in many branches. These are matters to which careful thought is already being given by the Department.

Respectfully submitted,
WILLIAM H. BOVEY, '94, *Chairman*



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This program is part of the telephone ideal that anyone, anywhere, shall be able to talk quickly and at reasonable cost with anyone, anywhere else. There is no standing still in the Bell System.

TERRACES AND TOWERS

(Continued from page 76)

conditions but a hundred stories is easily a structural possibility, and the Metropolitan Life Insurance Company has just announced that it expects to build one. Such a building would occupy a whole block and would contain within its vast body all of the functions of a small city, a veritable *urbs in aedificio*.

In so short a sketch of so vast a subject there is little space to discuss the unsolved problem of street congestion. Automobiles plus the population of the skyscrapers have converted our streets into human sluice ways. Raymond Hood suggests that all skyscrapers be isolated with sidewalk space entirely about them. The Frenchman, Le Corbusier, advises that the ground floor be partly open, the building resting on its columns as on stilts, exactly as is done now in buildings erected over air rights. Mustapha Kemal Pasha in his new capital at Angora proposes to build very wide through arteries on which buildings will not face and in which traffic can stop only at street intersections. The problem of traffic congestion is like the problem of the skyscraper thirty years ago and like it the solution will surely be found.

Cities are beginning to show stratum of high buildings. In Chicago we have the pre-war skyscrapers, about four hundred of them, with their boxlike forms and continuous cornices, and the post-war skyscrapers with their 250 foot walls and their towers above, and now we are promised or threatened with a super-skyscraper with perpendicular walls 400 feet in height and a tower rising to 700 feet and more above the pavement. New York in the Chanin Building with its fifty-six stories has already achieved the super-building. The Chrysler Building, under construction, will be 808 feet high, and as I write there is an announcement that the ex-governor of New York and champion of personal liberty is to head a syndicate which, on the site of the old Waldorf-Astoria Hotel, will erect a building eighty stories in height, over 1,000 feet, and costing \$60,000,000. And there is the Metropolitan Life Building mentioned above. It is not alone in height that American architects are making this an age of architectural wonders. Study and money, as never before, are being lavished on the details. I know a building in which the elevator doors are modeled by Paulanship and the color scheme determined by a famous painter. Lowly things like lighting fixtures have been born again and utterly revolutionized in form and beauty by the new art. New materials for walls, floors and ceilings have suddenly, almost mysteriously, appeared. Color, so long avoided, glows without and within.

The skyscrapers are the greatest works of architecture since the cathedrals of the Thirteenth Century. Those were called forth by the ecstasy of mediaeval faith. These are born of the fervor of business and science. Each was the inevitable and truthful creation of the genius of its time. The skyscrapers are truly cathedrals of commerce and they make the Thirteenth and Twentieth brothers among the centuries. But scorn them not because they spring from stocks and bonds instead of breviaries and missals. Whatever their origin, their structure was raised to those great heights with a crusader's courage and they are veiled with forms apocalyptic in their beauty.



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RESEARCH AND LABOR

(Continued from page 78)

tightening bolts; he was building automobiles, and they left the assembly line at the rate of four a minute. He had steady work, good pay, and his hours were not long. Upon the whole he would probably prefer it to the effort and monotony of turning a windlass to hoist ore as other men once did.

It is true, nevertheless, that there are many jobs at machine tending, where the worker has no responsibility for its control, which are demoralizing and deadening for the individual endowed with imagination and initiative. Not all workers, however, are so endowed. There are those who prefer repetitive work which they can easily learn, and which makes little or no demand upon mentality.

An instance comes to mind where there was a large monthly turnover of labor in an establishment in which the most effective workers remained indefinitely. A psychologist was called in who applied intelligence tests to the whole group. It then became evident that only the more intelligent workers were involved in the turnover, those of low intelligence being contented and happy in their work. The advice of the psychologist to the management in this particular instance was, therefore, "Select stupidity and train it."

Stuart Chase estimates that there may be in the United States 5,000,000 persons whose work is wholly dominated by the machine. That is less than five per cent of our population, or about thirteen per cent of those gainfully employed. I do not know the basis of his estimate, but it would seem as though the country could provide that small proportion of persons mentally qualified to find satisfaction in such jobs and badly handicapped for making a living otherwise.

THE IMPORTANCE and advantage of the proper mental and physical adjustment of the worker to his job are beginning to be recognized by science and management alike. His reactions under strain and the many factors affecting his well-being and efficiency are now the subjects of serious study by such agencies as the Industrial Fatigue Research Board and the National Institute of Industrial Psychology in England, the Psychological Institute of Paris, and other organizations and individuals in the United States. There, especial significance is attached to the comprehensive program of research recently undertaken by the School of Business Administration of Harvard University in conjunction with the Harvard Medical School.

For this research there has been organized a group of eminent physiologists, psychologists, medical specialists, and biochemists, who are endeavoring to investigate the human individual rather than a particular physiological mechanism. To this end they are proceeding to take as many as possible of the various measurements simultaneously, and they are thus beginning to arrive at some general understanding of the way in which the various organic functions supplement and compensate each other. Through this simultaneous study of the various organic changes which result from effort the laboratory has reached an important initial generalization, which is that "high production occurs if the worker's organism is kept at equilibrium when his (Continued on page 108)

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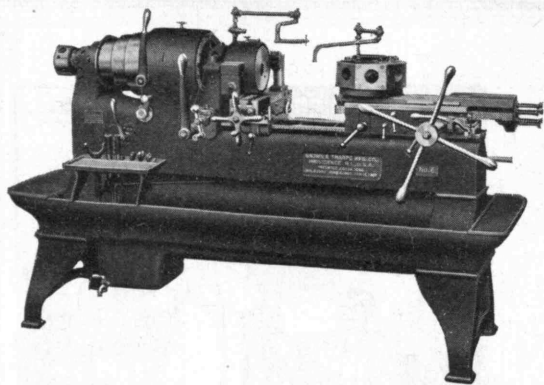
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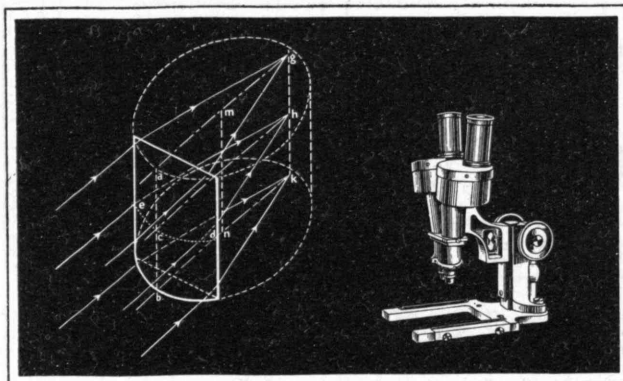
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RESEARCH AND LABOR

(Continued from page 106)

metabolic rate (his consumption of oxygen) is lifted." This gives a new conception of "work" and provides a first tentative indication of the way in which the happiness and content of mental equilibrium may be related to organic equilibrium or changes of organic balance.

Concurrently with the studies in the laboratory, investigations are going on into the preoccupations of the worker as developed not only by his job, but by his family and social environment.

We may reasonably expect that science, through its studies of the worker himself in all these aspects, will ultimately show the way to such better adjustment of the worker to the work as shall add greatly to his contentment and well-being.

FOR MANY YEARS manual workers entertained the fallacy that there is only so much work to be done in the world. Since its amount seemed to them hardly sufficient to keep them all employed, it appeared obvious that any device that enabled one man to do the work of two must deprive the second man of his job.

The typewriter undoubtedly displaced some copying clerks, but it provided employment for a far greater number of typists, led to the establishment of special schools, and provided jobs for thousands in factories for manufacturing the machines and their accessories of ribbons, carbon paper, stencils, and so on. The linotype, which enabled one man to do the work of six, reduced the hours of work from ten to eight and put wages up twenty per cent. It improved shop conditions and ensured greater regularity of employment. It eliminated the tramp printer, but ultimately provided more jobs and better jobs for workmen of a higher type.

The introduction of pneumatic tools like the riveter, drill, and stone chisel undoubtedly, for a time, deprived some men of work, but they so facilitated metal and stone work, the sinking of foundations, and the fabrication of steel structures that, in America at least, the volume of such work increased so rapidly that many more men soon found employment in the operation of these machines, while the making of the machines themselves became an important industry.

Knowledge is of two kinds, static and kinetic. Static knowledge may satisfy the individual, but only as knowledge becomes kinetic can the world's work be done. It becomes kinetic as it remolds men's minds or induces thought which leads to action, and it then finds, perhaps, its commonest expression in invention. Fortunately, a large proportion of the new knowledge acquired by the world through the incessant questioning of nature during the last hundred and fifty years has assumed the kinetic form, with the result that science has not only freed the mind of man from countless inhibitions and taboos, but has become, as indicated in the above examples, the most prolific creator of new jobs.

In considering the impact of science upon industry one's thoughts naturally first turn to electricity. We are within two years of the centenary of those pregnant discoveries of Faraday in the laboratory of the Royal Institution, which, for the first time, (Continued on page 110)

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RESEARCH AND LABOR

(Continued from page 108)

made possible the production of current by mechanical rotation. The earlier contributions of Volta, valuable and suggestive as they were, left us with no better source of current than the primary battery. Before Faraday there was nothing upon which to build even the beginning of an industry. Faraday furnished the fructifying idea which in the minds of Wheatstone, the Siemens, Gramme, and Pacinotti soon bore fruit as the dynamo. Upon this machine as its foundation has since been built the great superstructure of the electrical industry with its electric light, power, and traction companies, electrochemical plants, and the manufacturing companies which furnish a bewildering variety of electrical equipment, apparatus, and supplies.

In 1876 there appeared in America the Brush dynamo and his commercial system of arc lighting, and about 1880 Swan in England and Edison in the United States developed the incandescent lamp. In 1882 the Pearl Street Edison Station in New York turned on its current to light the 400 lamps of its eighty-five customers. One may point out by the way that these customers were charged 1.2 per cent per hour for a 16 candle-power lamp, whereas today one cent will buy 125 candle-power hours.

For a time the electrical industry was concerned almost exclusively with illumination. It extended its field to traction about 1890 and developed a ubiquitous, reticulated system of street and interurban railways. The year 1894 witnessed the installation at Niagara Falls of water-wheel generators of 5000 kilowatt capacity, and a diversified electrochemical industry grew up around them. In 1903 came the first 5000 kilowatt steam-turbine driven unit. Today such units are built of 208,000 kilowatt capacity, requiring two tons of coal and 400,000 gallons of condenser water every minute of operation.

Because of these developments, which found their creative impulse in the brain of Faraday, electricity is now a servant in 16,000,000 American homes, in many of which it condescends to wash and iron clothes, clean the carpets, cook, and fill the ice chest. It is rapidly reaching out to the rural districts to lighten the labor of the farmer and his wife.

In 1869 the power at the command of an American workman was six-tenths horsepower. Today it is four and one-fourth horsepower, the equivalent of fifty-five man power, and three-fourths of this is furnished by electricity.

In the absence of statistics I can only hope that your imagination may enable you to form some adequate conception of the multitudinous opportunities for employment which these developments have brought to labor. As a starting point, there is the fact that 300,000 men and women are employed in the 1700 establishments engaged in making electrical equipment. This has an annual value of one and one-half billion dollars and includes 500 million incandescent lamps.

This brief survey will have failed altogether of its purpose if it has not brought home the fact that with the world's growing population the only remedy for unemployment is research. Were it not for the millions of opportunities afforded workers in the enterprises based on the contributions of science in *(Continued on page 112)*

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Fairchild Photograph on Page 100



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RESEARCH AND LABOR

(Continued from page 110)

years within the memory of most of us, we should now be faced in the United States with an unemployment problem appalling in its magnitude and heart-rending in its results.

THE MANY EXCELLENT PERSONS who anticipate with horror the ultimate standardization of the world through mass production should realize that the field of mass production is very definitely limited and its extension subject to check by many factors. Powerful among them are the demands of style, the desire for individual expression in clothes and surroundings, and the purchases resulting from what Veblen calls "pecuniary emulation," which, in the American vernacular, means "keeping up with the Joneses." There are limits to the efficiency of centralized management, success invites competition, and, with expansion, costs of distribution mount. Standardized articles must necessarily be limited to those which many people want, that is, those which permit of national distribution.

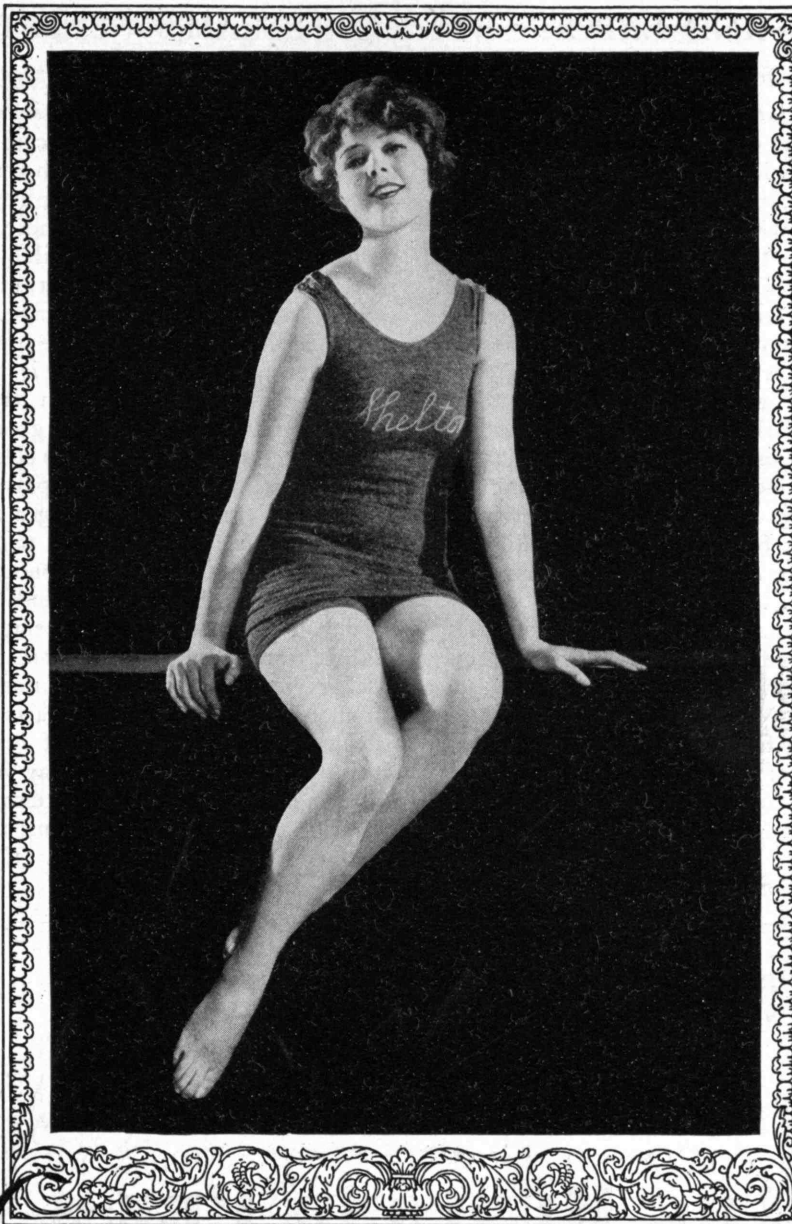
Mass production is here to stay, however, and the charge that it is incompatible with beauty cannot be lightly dismissed. Carried along in the flood of its output are many products deserving of a place nowhere but in a Museum of Bad Taste. That, however, is not the fault of the machine, but of the head, for the machine is as truly a tool of the head as the hand itself is. Though we have seemed, aesthetically, to be in danger of domination by the machine, we are beginning to prove ourselves its masters even in this relation. Many machine products are already better than the craftsman's best. Many others have their own distinctive beauty because of their perfect adaptation to their purpose. The proportion of both seems certain to increase. Whether it does or not, one must agree with Beard in his introduction to "Whither Mankind," that "those who are prepared to sacrifice the standard of living for the millions to provide conditions presumably favorable to the creative arts must assume a responsibility of the first magnitude."

But even in a machine age there is still hope for the creative arts. The machine is saving us much time. We produce, transport, and distribute the necessities of life with the expenditure of a small fraction of the time and effort required of our forefathers. The time cost of living has gone down. The machine is creating leisure, and we now need schools to instruct us in its use.

Recently there was held in Boston the second annual exhibition of paintings and sculpture by the members of the local Business Men's Art Club. It contained many examples of serious and meritorious work. There are, already, in the United States, about two hundred of such clubs. Why should not the operator of the machine similarly divert some portion of his new-found leisure from the movies and the comic strips to the creation of beautiful things and so regain the pride of craftsmanship and acquire leisure of soul?

We come, finally, to the charge that science, through the machine and mass production, has engulfed in materialism the civilization of the West.

With full recognition of the *(Continued on page 114)*



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RESEARCH AND LABOR

(Continued from page 112)

immense spiritual values latent in the philosophy of the East, one cannot close his eyes to the conditions from which, in the absence of science, it has failed to free the long procession of generations numbering hundreds of millions each. In China, with its low level of poverty, millions still die of famine, though food may be abundant one hundred miles away. In India, other millions, in the grip of caste, are bound to their predetermined status, though it may condemn them to go through life untouchable and unclean. Let us then, before we adjudge our own civilization to be materialistic, weigh these words of Hu Shih, a scholarly and traveled Chinese:

"To me that civilization is materialistic which is limited by matter and incapable of transcending it; which feels itself powerless against its material environment and fails to make the full use of human intelligence for the conquest of nature and for the improvement of the conditions of man. . . .

"On the other hand, that civilization which makes the fullest possible use of human ingenuity and intelligence in search of truth in order to control nature and transform matter for the service of mankind, to liberate the human spirit from ignorance, superstition, and slavery to the forces of nature, and to reform social and political institutions for the benefit of the greatest number — such a civilization is highly idealistic and spiritual."

STEAM *vs* ELECTRICITY*(Continued from page 81)*

required to construct the necessary power supply and distribution system and to procure the needed electric motive equipment and can with a reasonable degree of accuracy estimate the operating expenses under electric operation for the improved conditions for hauling the traffic which may be made available by electric motive power. These estimates, however, do not tell the whole story, since, for example, electrification may and normally should increase passenger traffic where the latter is of importance. Moreover, it is probable that traditional steam train schedules on any railroad ought to be radically changed to get the greatest benefit from the change from steam operation to electric operation. This applies to freight as well as to passenger service.

A special example of passenger traffic exists in suburban commuting service with multiple-unit cars that lend themselves to various economic numbers of cars per train to suit the traffic demands at different hours of the day. The quicker speeds and smoothness of operation of such trains compared with steam-powered trains in local service, serve as an attraction to riders who find automobiles and motor buses also available for their patronage. The possibilities of increasing commuting service during the "off-peak" day and evening hours by utilizing more frequent and shorter trains with moderate operating costs give multiple-unit trains additional advantages for suburban services. *(Concluded on page 116)*

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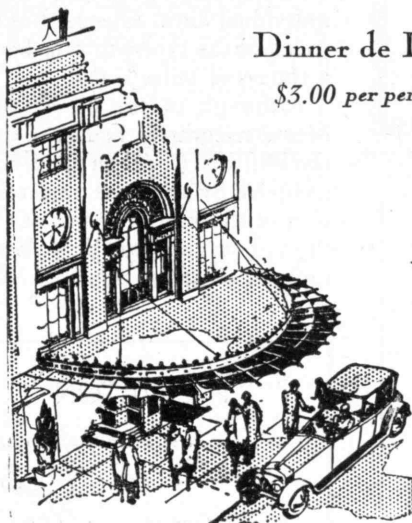
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STEAM vs. ELECTRICITY

(Continued from page 114)

Electric locomotive operation normally eliminates some locomotive weight from the train and secures a corresponding reduction in energy for the train movement, compared with steam operation for like service, or a corresponding increase in revenue tonnage may be hauled with equal total expenditure of energy. The saving in fuel consumed by embracing central station generation of energy instead of burning the fuel on steam locomotives secures a reduction in non-revenue freight haulage by an electrified railroad (*i.e.*, to the extent of the larger part of its own fuel) which also effects the release to a corresponding extent of freight cars and track-age capacity for revenue use. Electric locomotives of the best type are demonstrably capable of more continuous use than modern steam engines.

Although sometimes disputed, it is a clear fact that all transportation service done by steam engines may be as well accomplished by properly designed electric motive power, and in suitable situations at less operating cost. The shortcoming of railroad electrification is the first cost of installation which is high compared with steam motive power for most situations; and thus limits the economic applicability of railroad electrification in America to situations illustrated by the preceding discussion, and emphasized the importance of utilizing those electrical means which will produce the result with the most moderate first cost.

SCIENCE AND THE FRONT PAGE

(Continued from page 85)

the country's great communication laboratories brought forth the automatic printer or printer telegraph. Its possibilities for speeding-up the news seemed boundless. It employs a standard typewriter printing unit which transmits varied electrical impulses at the touch of the individual keys. Science thus succeeded in projecting the touch of the typist to type bars which might be in effect a thousand miles away.

Although in the course of time communication by Morse telegraphy had been quickened, notably through the Phillips' Code, an abbreviation of words and phrases compiled by a veteran press telegrapher, and the substitution of the vibrating bar of the "bug" or vibroplex for the old single lever brass key, automatic printer telegraphy spelled the doom of Morse (*Concluded on page 118*)

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SCIENCE AND THE FRONT PAGE

(Concluded from page 116)

telegraphy for news transmission. Even with the "bug" and the Phillips' Code, the best a Morse operator could do was fifty to sixty words a minute for a short time in emergencies; while the automatic printer can pound along at better than sixty day in and day out.

Recently press associations have eliminated Morse wires for the transmission of stock market quotations. The printer telegraph has been adapted to deliver its messages on a gummed tape which is quickly cut and pasted on special stock report forms. (See picture on page 83.) Thus a last stronghold of the Morse men crumbles, and soon their metallic language and traditions will have passed into the oblivion of silence. For generations they have used the figure "30" to indicate the end — the end of a news story, the close of a day, the end of a life. But traditions mean little to the callow youths operating printer circuits and hence to the veteran of the Morse wire, accustomed to the sound of brass on brass with an old tobacco box for a sounding board, "30" takes on a new and unhappy significance.

With these products of science at hand, what is to prevent the issuance of a master newspaper in New York and transmitting it by wire and air, column by column, or page by page, to a thousand newspaper offices, there to be reproduced on the engraver's plate and quickly printed? Even metropolitan dailies might simplify their task by connecting in rotation to London, Paris, Rome, and the like, quickly switching to Paris, for example, if London's story didn't quite fill the column. This would be a new development of the oldtime "boilerplate" services with a vengeance!

In time newspaper photographs will be reproduced in natural colors; their cheapness will make them in reach of every paper. Is this more visionary than talkie movies as a practical proposition were three or four years ago?

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The following are typical of the inquiries received:

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THE TECHNOLOGY REVIEW

SUPPLEMENT

NEWS FROM THE CLASSES AND CLUBS

1873

Probably no college class organization in the country holds a better record for reunions than the Class of '73, which held its Fifty-Sixth Reunion and fifty-ninth meeting on June 5 at the Hotel Bellevue. During the meeting plans were discussed for June, 1930, when the Class assembles for the sixtieth time. All indications are that this will be a gala occasion with 100 per cent attendance of active members, no matter in what part of the world they may be located. The following officers were unanimously re-elected: President, Dr. Francis H. Williams; Vice-President, Philip D. Borden; and Secretary-Treasurer, George M. Tompson. These officers, with William T. Leman and Robert A. Shailer, constitute the Executive Committee.

The Secretary reported that the Class has exceeded its quota toward the construction and equipment of the new Technology dormitories, the total amount to date collected being \$4505. He also reported that the total membership is nineteen, as it was last year, and that the only member reported ill is Randal Whittier. The following members were present: George H. Kimball, Henry P. Cogswell, Arthur W. Forbes, Philip D. Borden, Dr. Francis H. Williams, Frederick Guild, Jr., and George M. Tompson.

Letters were read from the following members who were unable to attend: George O. Carpenter, H. W. Blaisdell, W. T. Leman, Samuel M. Felton, and J. A. Henderson. — GEORGE M. TOMPSON, *Secretary*, 8 Whittemore Terrace, Wakefield, Mass.

1875

This is written at The Technology Club of New York at the eleventh hour to get in under the wire for the December Review. I spent the summer in Puget Sound and have been on the way to Boston since September 5, stopping at Minneapolis, Oconomowoc, Chicago, Washington, two weeks on the Virginia peninsula, returned to Washington on the day the first fall-winter luncheon was held at the University Club, then to Philadelphia, Newton, Lawrenceville, and New York. At each place Technology

men fill positions of trust and responsibility, and I am under obligations to them for many kindnesses.

In Washington I had a number of glad surprises. The banner one was Sunday dinner and a ride with Hanson '14 and Holcombe '04 and their families. We dined at the Columbia Country Club and afterwards motored an hour on smooth byroads and cross country, stopping at the Congressional Country Club, the last word in luxurious appointments. The glorious Indian summer was 100 per cent sunshine and the panorama of brilliant colors made a matchless foliage display. The afternoon was the more enjoyed by me for the company and this unexpected look in on these clubs, of which I heard and read. I have been to Washington every few years since my first visit in the winter of 1869 and have noted its astounding transformation from a messy higgledy-piggledy town to an ideal metropolis in a beautiful setting. I question if there is a national capital comparable to it, and this last visit has stirred my patriotic pride as never before.

On entering The Technology Club of New York, Steward Roake told me that I was in the nick of time for the second luncheon, which I was glad to attend. There were thirty-eight good fellows present. The talk of Donald R. Stevens '11, Vice-President of Okonite Cable Company, on "Simplicity in Factory Management," was more than commonly interesting. The Club, housed in the Fraternity Clubs Building on Madison Avenue at 38th Street, New York, has 583 members and is thriving apace. The membership should be largely increased. Technology visitors to New York should not fail to call and register. You are sure of a cordial welcome and are likely to meet old friends.

Wilfred and Mrs. Lewis sailed from San Francisco on October 10 for Japan, and are to continue around the world, to be gone eight months. Wilfred was a delegate, representing the Taylor Society, to the World Engineering Congress, which convened in Tokio on October 29. The special train from New York on October 2 carried 249 American delegates and their wives. In Washington the Japanese ambassador gave them a dinner and the following evening President

Hoover received them at the White House. They were becomingly entertained in Chicago, Los Angeles, and San Francisco. Emeritus Bobby Richards '68, Professors Jackson and Locke '96, Freeman '76, Jewett '03 and Laskey '18 also represented Technology at Tokio.

In the West I met a number who asked about Goodale's long sickness and each told of his ever alert kindness. I have never known a man who had as many friends as Uncle Charley, as he was first called in Montana and afterwards from the Rocky Mountains to the Pacific Ocean. He was everlastingly prodding me to arouse interest in Technology particularly among the '75 boys. I have greatly missed his frequent letters. Now, classmates, keep in mind that I am not a long distance mind reader, that for the good of the cause I am desirous to learn of your haps, and that a letter sent to me at the following address will be appreciated and will find me promptly wheresoever I may drop anchor this winter. — HENRY L. J. WARREN, *Secretary*, 1019 Beacon Street, Brookline, Mass.

1877

The Class had their Fifty-Second Reunion on June 14 at the Brae Burn Country Club, West Newton, Mass. For the benefit of those of the Class who could not be there, the following are those who attended: George Bartol, William H. Beeching, Henry H. Carter, Edward W. Davis, Linus Faunce, Joseph P. Gray, George W. Kittredge, Benjamin C. Mudge, Arthur L. Plimpton, George F. Quinby, Frank I. Sherman, and Thomas F. Stimpson. Belvin T. Williston was elected Secretary and Treasurer.

It was a happy gathering and gaiety of temper prevailed. Carter, who had recently returned from a trip around the world, told us some interesting experiences. He told us that the passengers on the steamer were divided into groups, according to the clubs, societies, or colleges to which they belonged, and Carter was glad to tell us that there were more members from the Institute present than from any other college. We renewed the memory of those members of the Class who had left us since the last meeting and also voted to send expression of our sympathy to Mrs. Hale.

From Henry Hibbard came the following letter: "It gave me distinct pleasure to learn that you had accepted the post of Secretary of '77, made vacant when dear old Dick left us. He set a pretty high standard for the position. The only thing at all notable about myself is that last year I gave the Henry M. Howe Lecture before the American Institute of Mining and Metallurgical Engineers. My subject was 'The Significance of the Simple Steel Analysis.'"

"I am one of thirty members of that Institute who have been a member for over fifty years, and I am to be formally invested with the insignia of that Institute's Legion of Honor, composed of members of that standing, at the coming meeting next month in San Francisco."

The following was taken from *Science* for July 13: "Dr. George Fillmore Swain, Professor of Civil Engineering at Harvard University, was made the recipient of the Benjamin G. Lamme Medal for his contribution to the advancement of the art of technical training by the Society for the Promotion of Engineering Education, in session at the University of North Carolina, Chapel Hill. Dr. Swain is the first to receive the medal, which will henceforth be awarded yearly in accordance with provisions in the will of the late Benjamin G. Lamme."

Henry Carter wrote to the Secretary as follows: "I was sorry to miss seeing you at the class luncheon and I want to congratulate you on your election as Class Secretary. In this connection I would suggest that our Class appear more frequently in the Class Notes. Hale used to keep this up with some frequency until he got ill."

While in Japan Carter got in touch with Takuma Dan of the Class of '78, who was well-known to all '77 men. Dan is now head of the Mitsui Gomi Kaisha and is one of the foremost men of Japan. He has been made a Baron by the Emperor. Dan informed Carter that the Faculty and the Corporation of the Institute had passed a resolution to confer on him "the most rare and highest academic honor," for which he was deeply touched and to whom he was already indebted for more than words could express.

Among Hale's papers was a list of names of members of the Class whose addresses are unknown. Can any member of the Class or any one else give me information regarding the following: David H. Austin, Edward F. Berton, Frederic W. Brown, William Burton, Thomas Byers, Arthur B. Coburn, John B. Correa, A. J. Goodman, Fred Haines, Nathaniel Hill, Frank T. Hopkins, Frank P. Knott, Chandler Macomber, Lyman W. Smith, Edward E. Piper, Wallace R. Pond, Frank Reed, John Riley, William Rowland, Francis W. Temple, Charles R. Tuck, and Henry Tudor?

The following letter from George F. Swain from Holderness, N. H., I insert in full, thinking it will be of interest to members of the Class, as well as the many others who remember him as Professor. "I am very glad to get your note,

and especially pleased to hear that you are to be Class Secretary. As soon as I heard of Hale's death I suggested you to take his place.

"There is nothing new about me. I had a paralytic shock in June, 1928, and have been in bed ever since. I retired from my teaching at Harvard last January and am now Emeritus. I began teaching at Technology in the fall of '81 with the Class of '82. My last class at Harvard was the Class of '28, so that I have taught for forty-seven years. It is not much compared with Professor Fay of Tufts, but still it is a long time. I still get a good deal of pleasure out of life, for I have no discomforts. I can read and my greatest enjoyment is seeing my friends, many of whom have called. I am spending a couple of months in my summer camp, but will go back to Brookline early in September. It would give me great pleasure if some of my classmates would come to see me when I return. Please note that my address now is 1574 Beacon Street, Brookline, Mass."

In Dick Hale's list of members whose addresses are unknown Francis W. Temple is accounted for in the following letter from Raymond B. Temple '09. "Your letter to my father, Arthur W. Temple of Reading, Mass., was forwarded to me at Fryeburg. This letter requesting information of him in connection with news for the Class of '77. I am sorry to report that he passed away on October 17, 1927. You probably are already familiar with the main details of his life, but I will give them to you in case you wish to complete your records.

"He was born at Reading, Mass., December 16, 1854, and was graduated from the public schools there in 1871, entering Technology that September in the Class of '75. After about a year and a half his health broke down and he had to leave the Institute. He later resumed his studies for a time with the Class of '77, as you know, leaving there about 1875 to enter Annapolis Naval Academy where he passed the entrance examinations at the head of his class, and where he roomed with Francis T. Bowles, late chief naval constructor of the United States Navy. After a few months at Annapolis, Arthur Temple suffered another breakdown and for several years was out of health. He finally became a carpenter and builder and for twenty years carried on this business at Reading, his native town, later entering the real estate business which brought him considerable success. He married on November 2, 1886, Jennie R. Barrus, for twelve years previously a school teacher in Reading. She died in May, 1912. I am their only child, born May 17, 1888, and I am a graduate of Technology in the Class of '09. I trust this will give you the desired information about my father.

"The Francis W. Temple mentioned in the list of those whose addresses are missing is not known to me. If he is a relative of mine it is so far removed that I have no knowledge of it. If I can be of further assistance to you please be free to call on me. By the way, my mother was a

sister of George H. Barrus '74, who recently passed away, and whom you probably knew."

Information comes from his executor of the death of William M. Whidden on July 27. So the silent majority increases. — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

1881

One of our associates, Walter E. Frost, who has always been a regular attendant at our class reunions, died on June 24, 1928. — Frederick P. Kendall, who has made his residence in Oregon almost since he left the Institute, died March 23, 1929. — Harry Cutler spent the winter at Coral Gables, Florida.

From the Boston *Herald* comes the following clipping: "One of the most celebrated pieces of sixteenth century tapestry in the world has been sold for about \$250,000, according to the *Evening Standard*. It is a Gothic tapestry which used to hang in the private chapel of Knole, the Kent residence of Lord Sackville, near Sevenoaks. It has been bought by an American, Robert Treat Paine, 2d, for the Boston Museum of Fine Arts."

Robert Treat Paine, 2d, was born in New Bedford in December, 1861, and graduated from Technology in 1881 and Harvard in 1882. He is a lawyer and has varied business interests. He was elected a trustee of the Boston Museum of Fine Arts in 1928 and his term will expire in 1931. He married Ruth Cabot, of Brookline, and he is a member of exclusive clubs of Boston and New York. His home is at 305 Heath Street, Brookline. — FRANK H. BRIGGS, *Secretary*, 390 Commonwealth Avenue, Boston, Mass.

1883

From Horace B. Gale, from on board the *Caronia* last May, comes the following letter: "Your ultimatum of April 14 threatening to draw on your imagination for a story of my recent life if I did not come across with the facts before the truth of said month, was disregarded because I felt that a draft upon your fertile brain would be far more entertaining to the Class, including myself, than any dry facts. I have been looking eagerly for this piece of fiction in *The Review*, but either I have missed it or it has not appeared. You know the standard of scientific accuracy in *The Review* has been tremendously raised since the pioneer days of Technology journalism, when Harvey Chase was editing *The Tech* and Arthur Little was contributing sea-serpent stories, so I fear that your contribution has been suppressed.

"On that assumption, I will say that since retiring from gainful, not to say painful toil, some years ago, my main hobbies have been town planning and fighting the billboard blight on Massachusetts scenery, both of which lines have led me more or less into politics and have served to make life busy and interesting. Incidentally, I have been supervising the building of a public library, and with Mrs. Gale's help, have built a cottage on a hill, commanding a fine

1883 Continued

view, where we expect to spend our last days on earth. That is, providing we return safely from the present journey, which appears to us innocents abroad as a great adventure into the unknown.

"To set it forth briefly, we are on our way to Paris, where we mean to put in eight or ten days and about an equal time in Switzerland. Then we shall take a few small samples of Germany and Holland and Belgium, and wind up with about six weeks in Great Britain. If and when we arrive safely home, and thereafter, we shall be delighted to entertain the classmates in the wee house aforesaid (provided they come not more than one couple at a time) for as long as they care to stay."

Mason Ham in his column "People You Ought to Know" in the *Boston Herald* for June 22, writes of Charles A. Coolidge: "More than forty years ago Charles A. Coolidge, Boston architect of international reputation, designed the Ames building. Unsung as it is today, the structure was, at that time, the highest office building in the East and one of the highest in the world. It helped show New York the way to skyscraper renown and served as a Boston landmark for many years. For the immediate purpose of this story it is interesting, because on its topmost floor Charles A. Coolidge's office is still located. Here he has designed many of the buildings of Harvard University, half a dozen Boston hospitals, half a dozen banks in Boston and Chicago, and medical and educational buildings rearing their stately fronts in such diverse localities as Constantinople and Peking."

"In 1906 Harvard University wished to confer on Mr. Coolidge an honorary degree in recognition of his ability in general and, in particular, of his eminently satisfactory work in designing the Medical School buildings. As usual, that year most of the honorary degrees were LL.D.'s, but since this seemed hardly appropriate for a man of Mr. Coolidge's specific talents, the authorities invented the degree of Doctor of Arts and gave him that instead."

"Apart from his artistic and architectural interests, Mr. Coolidge likes, first, fishing and then hunting better than anything else in the world. With Gordon Abbott, Philip Stockton '99, and a few other men he has a hatchery for trout on Cape Cod. With these same men he shares a lodge for quail shooting in South Carolina, and he does a considerable amount of salmon fishing in Canada and duck shooting along the borders of Chesapeake Bay. . . ."

"He was graduated from Harvard in 1881 and after studying architecture at Technology for two years, went into the office of H. H. Richardson. He has been associated with several other partnerships, always as head of the department of design, until the present partnership of Coolidge, Shepley, Bulfinch and Abbott was formed in 1924. From 1892 to 1900 he was in charge of the Chicago office of Shepley, Rutan and Coolidge."

"He is President of the Massachusetts Society of the Cincinnati and, in 1900, received the decoration Chevalier Legion d'Honneur, France. Other offices held now or in the past include the presidency of the Boston Society of Architects, trusteeships of the American Academy at Rome and of the Art Institute of Chicago, membership in the American Academy of Arts and Sciences, directorship of the American Institute of Architects, and others. Buildings he has designed include the South Station, the Old Colony Trust Company, the Children's Hospital, the Boston Lying-In Hospital, and several others in this city; the Public Library and the Art Institute in Chicago, and buildings for the New York Hospital, the University of Virginia and the University of Chicago. At present he is working on designs for the various units of the new Harvard housing plan and on proposed new buildings in Harvard yard. . . ."

It is the Secretary's sad duty to record the sudden death of Frank Tenney, an account of whose death was in the Philadelphia papers of October 5. His death occurred at the Marion Cricket and Golf Club on that date. Frank was playing a foursome with W. W. Atterbury, President of the Pennsylvania Railroad, Thomas W. Hulme, Vice-President, and Edgar C. Felton, a director. He suddenly fell on the course, and his death was pronounced due to heart failure by a physician who arrived very soon afterwards. For many years Frank was assistant to the Vice-President of the Bethlehem Steel Company. He retired several years ago and has been living at Ardmore, Penna., with his wife. At the time of his death he was a director of the Electric Hose and Rubber Company of Wilmington, Del. The death of his only son during the World War was a very severe blow from which he never fully recovered, and it had a marked effect upon his health. He is survived by his wife, who was the former Miss Edith Bouvé, of Boston, and two daughters, Miss Margaret Tenney of Haverford, and Mrs. Henry Edson of Greenwich, Conn., and also by his sister, Mrs. F. Foster Sherman of Lexington, Mass.

Mr. and Mrs. George R. Underwood announced the marriage of their daughter, Katherine, to Mr. John L. Carten, Jr., on Thursday, September 5, at Peabody, Mass. Those who had the pleasure of meeting Katherine at our Class Reunion in 1928 will not be at all surprised, as Katherine was such an attractive girl that something like this was bound to happen, and it did.

George A. Smith is now living again at 41 Academy Street, Arlington, Mass. — Harvey M. Mansfield may be reached at 711 Wallace Building, Tampa, Fla. — DAVID WESSON, Secretary, 111 South Mountain Avenue, Montclair, N. J.

1887

Since the publication of the last Class Notes in July the mortality among our members has been greater than ever before in a period of similar length. Five of

our Class have passed on in a period of less than three months: Bryant, Twombly, Smith, Greeley, and Fish. All of these were men of ability and great achievements regarding whom brief sketches are in preparation for publication in a later issue of *The Review*.

Henry Fletcher Bryant, who passed away on June 16, following a surgical operation, was buried in Bryantville, Mass., the home of his boyhood and youth. Services were held at his Brookline home at 61 Clark Road, which were attended by many friends, including members of the Engineers Club of Boston, and the Appalachian Club, and a representation from the Class of '87. The Secretary expected to have been able to furnish a sketch of the long and useful career of our esteemed classmate, but unfortunately the desired material was not available for use at this writing. A longer account of the activities of Bryant appeared in the November issue of *The Technology Review*.

Alexander Hamilton Twombly died on June 26 at his residence at 3 Fernwood Road, Summit, N. J., after a long illness. He is survived by his wife, a daughter, and one son.

Charles Porter Smith died on July 14 at his home at 78 Pleasant Street, Methuen, Mass., after an illness of three weeks. He is survived by his wife, two daughters, and one son.

James Thornton Greeley, M.D., died on August 29 at the Memorial Hospital in Nashua, N. H., following a brief illness. He is survived by his wife, two sons, and one daughter.

Walter Clark Fish died on September 8 at his home at 96 Bay State Road, Boston, after having been in ill health for several years. He is survived by his wife and three daughters.

Edward R. Pearson of 208 Broad Street, Portsmouth, N. H., was in Boston early in June. We hoped he had come to tell us that he intended to be on hand at the annual dinner to be held that month, but he said he would be unable to do so. He is one of those whom we have seldom seen since Technology days but one with whom we would be glad to renew associations and keep in closer touch.

Windy Cole was fortunate in having the opportunity to take three weeks for a motor trip around Nova Scotia and Cape Breton Island during August. If one enjoys scenery as beautiful as Nature can make it, quaint places, and the simple life, a trip of this sort is strongly recommended. Trout and salmon are said to be in the numerous streams in quantity, but experience on this trip showed how drought can seriously interfere with this kind of sport. Most of the streams, which at times are rushing waters, were in August merely a series of pools with hardly enough running water to allow fish to swim from one pool to another. In one of these pools seven salmon, varying in size from fifteen inches to three feet long, could be seen, but they appeared to be dormant, due probably to the water being warm and insufficient. It was said that these salmon had been in that particular

1887 Continued

pool for five weeks in spite of the many efforts to coax them to bite at the hook. Cole said that while he was in New Glasgow, N. S., he hunted up Archibald McColl, who has several times come all the way to Boston to attend class reunions. McColl looked well, seemed particularly well pleased to hear direct from '87, and said he intended to continue his interest in the Class which has never waned.

Giles and Mrs. Taintor, after spending practically all summer at their attractive home in Westport Point, Mass., have just returned from a delightful motor trip of ten days through New Hampshire, Vermont, and into the Adirondacks. — EDWARD G. THOMAS, *Secretary*, Toledo Scale Company, Toledo, Ohio. NATHANIEL T. VERY, *Assistant Secretary*, 96 Bridge Street, Salem, Mass.

1889

"*Quels beaux vieillards!*" cried a chubby gamin on a street corner of Revere, Mass., as the *de luxe* bus, Miss Eighty-Nine, came to a dignified stop at the upraised hand of a traffic officer. The exclamation was justifiable, for a finer display of well-ripened, masculine maturity is seldom seen, in traffic at least. The occasion was the observance of '89's Fortieth Reunion, which took place on June 4, 5, and 6, in the hospitable and appropriate environment of the Corinthian Yacht Club at Marblehead Neck. Everything was perfect; all Nature seemed in tune, and never displayed her charms more extravagantly.

A varied program had been visualized by the administration, but after a good display of energy in embarking on the launch for a cruise along the North Shore as far as Gloucester, the unanimous desire of the members, as one epigrammatically expressed it, was to "just set," and so the rest of the show was practically 100 per cent "setting," but this did not prevent a constant outflow of priceless ideas on every known subject in science, prohibition, politics, business, and prohibition.

Regrets, usually in the form of ingenious alibis, alleging press of business, previous engagements, and in some cases really touching instances of extreme domestic devotion were received and read. Between the frequent expeditions to the dining room, Jimmy Cartright warbled as of yore about the barn dances "down on the old home farm" and sleeping "in Grandma's old four-poster bed," but he didn't warble half as much as we wanted him to. "Cap'n Sims," that sterling classic, was related by Juddy, as well as the adventures of "Tige" by Parker Fiske, who also gave the Class several interesting examples of the occult and mysterious lore of the dawn of history with which his brain is crammed.

Twenty-seven men were present: Alley, Bixby, Bliss, Borden, Brewer, Cartwright, Cutter, Davis, Estabrook, Fiske, E. V. French, Gleason, Hunt, L. E. Johnson, Kilham, Kinsman, Kunhardt, Laws, W. W. Lewis, Mott, Smythe, Thurber, Truesdell, Underhill, Wales, Warner, and Whiting. Everyone had a delightful time. The management of the Club outdid

themselves in hospitality, the menu was beyond compare, and the vote of the members was never to go anywhere else for a reunion.

The Boston *Evening Transcript* of June 20 had the following: "Following the resignation of Joseph P. Gray as President of the Boston Manufacturers Mutual Fire Insurance Company, the directors have elected L. H. Kunhardt a Director and President of the company. . . . Mr. Kunhardt is a graduate of the Institute in the Class of '89 and has always been connected with mill construction and fire prevention work. He was first in the inspection and engineering department of the Associated Factory Mutuals, beginning in 1890, and for twenty-three years served as Vice-President of the company." — WALTER H. KILHAM, *Secretary*, 9 Park Street, Boston, Mass.

1891

Barney Capen is now at the Early Convalescent Home in Cohasset, Mass., and will probably stay there until the first of the year. He has improved very much since he went to Cohasset, and is able to get around on crutches and even walk a little without them. He has taken several automobile rides, and his general health has very much improved. His employers, the New England Tel. and Tel. Company, have helped him in many ways and arranged for him to go to Cohasset, and a number of his classmates have helped to take care of the expense. For all of this he is exceedingly grateful. A number of his classmates have visited him at Cohasset. In a recent letter to the Secretary he speaks of how beautiful the place is where he is staying and how charming the people are. He says he is able to get out a great deal and this has done him a lot of good.

George Holmes has a new log cabin at Boothbay Harbor where he spent the summer. Will Wilder has a summer place in Maine not far from there. Charlie and Mrs. Garrison spent part of the summer at Kittery, Maine. — Charlie Ricker of Havana came north this fall and spent two weeks at Waterville, N. H. He called on the Secretary on his way back and said that he had enjoyed his holiday very much.

Will Wilder's company, the Merrimac Chemical Company, has been taken over by a large St. Louis concern. This is the day of big combinations. Will is recognized as one of the leading chemical engineers of the country and is very prominent in the chemical industry. — Alexander Hovey Campbell, the oldest son of George A. and Caroline Sawyer Campbell, died suddenly on July 12, in his fourteenth year. He had undergone an operation for acute appendicitis at the House of Mercy Hospital at Pittsfield, Mass., and heart failure occurred thirty hours later.

The following is from *Mining and Metallurgy* for January, 1929: "R. W. Bissell who died on April 19, 1929, was born at Allegheny, Penna., in 1866. He attended the Institute but did not graduate with the Class of '91 and later was graduated

with the Class of '12 of the University of Washington. His first job was with the Pennsylvania Railroad, and from 1891 to 1904 he was with the Duquesne Forge Company, the last four years as superintendent. Between 1904 and 1910 he was with the Luster Mining Company in Durango, and after 1912 he was a graduate student at Columbia University. Since 1915 he made his headquarters chiefly at Pittsburgh and was, for a time, general manager for the Pittsburgh Steel and Chemical Company." — HENRY A. FISKE, *Secretary*, Grinnell Company, 260 West Exchange Street, Providence, R. I.

1893

At the American Society of Civil Engineers Convention in Boston in October, Fay presented a paper on "The Development of the Boston Metropolitan District," and Spofford a paper on the construction of the Lake Champlain Bridge, a structure on which Fay, Spofford and Thorndike served as engineers for an interstate commission representing Vermont and New York. The bridge was dedicated on August 26.

This convention brought a glimpse of our classmate, Willis T. Knowlton of Los Angeles. He was making an extended trip with the convention as a focusing point, coming east by a northern route and returning through the south. Knowlton is engineer of sewers for the City of Los Angeles.

James C. Boyd has made a change in business and in residence. He is Vice-President of F. H. McGraw and Company of 51 East 42d Street, New York, which was incorporated this fall for engineering construction work. His home is at Mount Vernon, N. Y. — Ed Carney and his wife were in Europe for several months this summer, as evidenced by cards from Switzerland and Carnic.

The members of the Class who attended the Reunion a year ago in June, a feature of which was the tea given by the Class President, W. S. Forbes and Mrs. Forbes at Lone Tree Farm in Hamilton, will remember with pleasure meeting Barbara Forbes, only daughter of Mr. and Mrs. Forbes, who assisted her mother on that occasion. Miss Forbes and Arthur H. Hall, Jr., of Baltimore, were married at Christ Church, Hamilton, on June 15. A reception followed at Lone Tree Farm. — Helen Douglas Gardner, daughter of Mr. and Mrs. John Howland Gardner of New York and Lyme, Conn., was married in Lyme in August to George Washington Elkins 2d '25 of New York. Gardner is President of the Hartford and New York Transportation Company. — Percy Thomas is a member of the Board of Zoning Adjustment of Montclair, N. J.

From the Alumni Office notice is received that John Stafford White, reported deceased in 1919, is alive and living in Glendale, Calif. — The Alumni Office reports the death of Harry F. Roach, architect and engineer of St. Louis, Mo., on July 28, 1929.

Stephen L. Breed died on September 15. He was a member of the Class from 1890 to 1892, but gave up the study of engi-

1893 Continued

neering for the law. The Boston *Herald* of September 17 says: "Stephen L. Breed, sixty, lawyer and real estate dealer, died of a heart attack late Sunday night, September 15. He was the son of Albert H. and Ellen Rebecca (Larrabee) Breed, descended from Allen Breed, who figured prominently in the founding of Lynn and who owned the land on which the Battle of Bunker Hill was fought. He was a graduate of the Lynn public schools, and Boston University Law School, later being admitted to partnership with Henry C. Attwill, chairman of the Massachusetts Public Utilities Commission, and the late Hiram C. Miller. Mr. Breed was a member of the Lynn and Essex County Bar Associations and Mt. Carmel Lodge of Masons. He left no immediate family."

Our Assistant Secretary, George B. Glidden, with Mrs. Glidden, has recently returned from a very interesting trip of about two months and a half through South America. Here is a story of it in his own words: "We left New York for Rio de Janeiro by boat. On the ninth day of beautiful weather we crossed the equator and King Neptune with his court proceeded to initiate us into the mysteries of the deep. We were admitted with full form and much ceremony to the Order of Sea Urchins. On the early morning of the thirteenth day we entered one of the most beautiful harbors in the world, that of Rio de Janeiro. Winding in between the islands and promontories with mountains for a background and the sun rising from the ocean made a picture that literally no artist could paint. Rio is one of the show cities of South America. With its narrow streets and shops practically without fronts, opening on the sidewalks, in the old quarters, its broad and beautiful boulevards, its monuments and fine buildings, its wonderful beaches, its scenic grandeur, its variously colored bungalows and its yellow fever, is a city in which many days may be spent with something doing every minute. Portuguese is the language spoken, but you may get along fairly well with English, and a little French helps. If you leave Rio in the early evening, just as the lights are coming on, you see a panorama which is unique, beautiful and remarkably impressive. The next morning we reached Santos which is really the harbor of Sao Paulo. Santos with its 50,000 inhabitants is rather uninteresting, but coffee is everywhere. Tons of it are shipped yet that which is served is not fit to drink, according to our taste. The thing to do in Santos is to hire an automobile and get up to Sao Paulo as quickly as possible, a charmingly hazardous drive (especially if the roads are wet) of thirty-odd miles. Here is a beautiful city of 250,000 with all the fixings and one of the unique features is the snake farm where the poisons are extracted from snakes, made into serums and sent all over the world. Back to Santos and on to Montevideo, where we found one of the most beautiful capital buildings in the world. An overnight sail and we were in Buenos Aires, well called the Paris of South America, with its beautiful rose gardens, fine buildings,

boulevards and monuments, its jockey club and wonderful race track. Leaving Buenos Aires across the Pampas to Mendoza we changed to a well-appointed narrow gauge train of the Trans-Andean railway. Crossing the Andes is too stupendous an experience for one day. It is a pity there is not a good half-way house. The endless climb up the Argentine side and the far more interesting and truly terrific Chilean descent is overpowering. The Andes, always barren except for certain tropical zones in Peru, are apparently sheer rock of dark purple and brownish shades. Every few minutes the little train running on the edge of nothing at a great height, cuts a sharp corner by disappearing into a tunnel. On this journey, as on all railway journeys over the Andes, it seems impossible to ever lose sight of the marvel of the engineering, even in the face of the wonder of the mountains.

"Santiago, a homelike, friendly city produced a very up-to-date hotel as well as another fine race track where you gaze across the splendid turf towards the snow capped Andes. There is a mountain, Cristobal, in the city with a statue of the Virgin on the peak. Also, the Santa Lucia hill attractively wooded with wonderful gardens, adds beauty to the city. The fire alarm here sounded like warnings for air raids in London during the war.

"In Valparaiso you really feel you are in a foreign land and a more primitive one. The room at the Hotel Royal, an old native house, was sixteen feet high, twenty-four feet long and twenty-one feet wide, and had a double entrance door. However, there was a private bath and the landlord spoke English perfectly. Only interpreters and guides had spoken English since landing in South America. There is much beauty and uniqueness in Valparaiso: A race track, of course, a delightful seashore suburb, *Vin̄ar del Mar*, a golf club on a hill named Granadilla, the finest panoramic course in the world. Strange clay roads that wind through queer settlements in woods and high above the city on real ledges of great height. In fact so much of the city is built on such steep hills that little cable cars are installed at frequent intervals to lift people up these hills." [Editorial note: The remainder of Mr. Glidden's travelogue will appear in January.]—FREDERIC H. FAY, *Secretary*, 44 School Street, Boston, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, Box 1604, Boston, Mass.

1895

With deepest regret we announce the death of Wallace C. Brackett on October 14 at his late residence, 308 East 79th Street, New York. He was buried in the Cambridge Cemetery. Wallace had been ill for a period of months, but finally recuperated to the extent of returning to his business. The acute heart trouble which he had been fighting finally caused his collapse. Brackett had always been an outstanding example of fidelity and loyalty to his Class and his many activities in behalf of the Class and the Institute will remain a testimonial to his memory. His many friends and acquaint-

ances will miss him, and our Class in particular has suffered an extreme loss. Our deepest sympathy is extended to his bereaved family. In recognition of his unflinching loyalty to his Class, our appreciation has been extended to his family in a most fitting remembrance.

We quote the following, taken from the *Brookline Chronicle*: "Wallace Clarke Brackett, until recently a well-known resident of Brookline for many years, died Monday at his home in New York in his fifty-fifth year. Mr. Brackett was born in Newton and was graduated from Technology in 1895. He later engaged in business and was for some time President of the Sanitas Manufacturing Company in Boston. On going to New York about three years ago, he entered the real estate business with the Charles G. Edwards Company. He was a member of the University, Exchange, and Engineers Clubs of Boston. Surviving are a widow and a daughter, Phyllis; also his mother, Mrs. Frances Shapleigh Brackett of Newton; and a brother, George Brackett of California."

We have also been notified of the death of John Dove on August 4 at Butternut Brook Farm, Litchfield, Conn. Alas, we are passing onward, one by one.

Walter F. Stevens has been appointed assistant superintendent of the Purchasing and Inter-Service Bureau of the Edison Electric Illuminating Company of Boston. He also retains the position which he has held for many years, of superintendent of the supply department of the company.—Thomas H. Wiggin is now President and Chief Engineer of the Public Works Engineering Corporation which is affiliated with the Federal Water Service Corporation at 27 Williams Street, New York.—Dr. John T. Dorrance is spending the fall in Europe. We refer our readers to Jack's business extension as recited in *Time* for September 2. The Campbell Kitchen is now invading Chicago and the colorful tomato will shed its light to Chicago through the business genius of our well-beloved classmate.

The luncheon of the '95 New York Club was held on June 12 at the Railroad Club at 30 Church Street, New York. Nichols, Park, Wolfe, Fred Cutter, Hannah, Moore, Schmitz, and Child attended.

Azel Ames is now spending some months in the Adirondacks for his health. Write him at 68 Franklin Avenue, Saranac Lake, N. Y.—Canfield has been with his son Norton at Ann Arbor, assisting him to carry a medical degree with honors.—Judson C. Dickerman is now with the Federal Trade Commission at Washington, D. C.—Fred W. Draper can be reached at Mount Isa Mines, 77 King Street, Sydney, New South Wales.—Eddie Alden at Hartford, Conn., advises the '95 Club is holding daily luncheons with 100 per cent attendance.

Your officers are working on plans for our Thirty-Fifth Reunion and information will be coming forward shortly.—LUTHER K. YODER, *Secretary*, Chandler Machine Company, Ayer, Mass.

1896

In connection with Myron Fuller's trips, one bit of information which has not appeared in print may be of interest and help to others who are planning trips. He says that his last foreign trip was unique in being made on a freighter instead of on a regular liner. The company's letter assured Mrs. Fuller and himself of all the comforts of a private yacht, and they had them, together with all of the discomforts. Their cabins were better than the average on a big steamship. The ship was much steadier, the bridge was their veranda, and the chart room was their parlor. Library, phonograph, and radio were available for their private use. A Chinese and a Philippine cook provided them with very good food, and the pantry was left unlocked so they could help themselves to food and make coffee in the percolator at any time. The chief drawback was that they knew altogether too much about the operation of the ship through their intimacy with the officers, and they became confidants of each respective officer whenever he had a grouse or a complaint regarding his shipmates or the conditions on board the ship. The chief steward had an ever-recurring theme on the highway robbery methods of those from whom he bought produce, and the captain was particularly vindictive on the consuls and shipping agents through whom he had to deal. When they sailed from Algeria to Morocco they were seven men short out of a crew of thirty-four, as the attractions of the City of Algiers had been too many, but a few hours without money brought about a change of heart in the missing men, and they went to the consul for help. He sent them over to Morocco with the natives in a third-class train, and the cost of their three-day trip, as well as a fine of two days' pay for every day they were absent, was charged up to them.

Altogether the Fullers say that they enjoyed traveling on the freighter more than on the big ships on which they had previously traveled. They touched at many ports not visited by the cruising ships, and they had much more time for sight-seeing as well as for independence of action. In case any member of the Class is contemplating a foreign cruise, the suggestion is made that he get in touch with Fuller to consider the possibilities of making such a cruise on a freighter.

The last word from the Secretary was dated October 9 on the eve of sailing for Japan. He reported that he and Mrs. Locke were exactly thirty days in making the passage by rail from the Atlantic to the Pacific, visiting the mining districts of various states and with the busiest three days of all, October 7, 8, and 9, in attendance at the convention of the American Institute of Mining and Metallurgical Engineers in San Francisco. He promised to get busy as soon as he was on board ship and prepare a detailed report to be mailed back from Honolulu.

Con Young with Mrs. Young appeared at Technology at the end of September after having made their usual fall trip to the Adirondacks. They spent the summer on Cape Cod looking after the building of their house which made very satisfactory progress. They are planning to winter in Florida.

John Willis very kindly sent a letter from Victor Shaw, who wrote him from Loring, Alaska, last summer: "The other day I went out for a long forest tramp, mainly for exercise, but also to explore a certain stream at the head of which I had always thought lay a good-sized lake. I took no fishing gear but packed a 30-30, since this is raw wilderness teeming with bear and wolf. . . . Well, I had the exercise, but I found no lake, but there were plenty of tracks of deer, beaver, and gray wolf. Up in the center of a secluded mountain basin I heard the grunting and snuffling which I well knew was caused by Bruin in person. Ordinarily I would merely have passed on, but in this case, being springtime when fur is good, especially on a cub, I planned to do some shooting because I wanted a rug. In the opening between the trees I saw the head of a bear peering at me, just a furry, brown face topped by a pair of funny, bat-like ears. I blazed away, but the borrowed gun had the front sights too high and although the bear dropped for an instant, he scrambled to his feet and waddled off into the brush. I knew I had hit him hard, but I did not care to be precipitate in following wounded game. So I ate my lunch and waited till the bear should lie down and get too stiff to rise again. Then I trailed the blood splashes until, pushing through a berry thicket, I came suddenly upon him, lying at my feet with his eyes shut. It never occurred to me that he wasn't dead, or at least on the verge. I parted the bushes and put out my hand to grab him by the ear and roll him over to see where the bullet had struck, when zingo! In one wild leap the bear was crashing downhill through the brush. Later trailing showed I had no chance to get him. Not a thing was the matter with the poor brute except a broken jaw. . . . I've still a cub to get for a nice rug.

"So much for your entertainment this time. Another letter might detail another of the many interesting phases of this different life. I'm working much of it into fiction. Rud of *Adventure* has just asked me to work up a series of yarns with one central character and having to do with this setting. Doubleday, Doran also has just written for more of my stories dealing with this neck of the woods." — CHARLES E. LOCKE, *Secretary*, Room 8-109, M. I. T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

1897

Henry E. Worcester, who for a number of years has held the position of Vice-President and General Superintendent of the Revere Sugar Refinery, Boston, has been appointed a Vice-President of the

United Fruit Company. He is rated as one of the best informed men in the sugar industry in the country.

Talk about versatility, what do you think is the latest from Hugh Moore, or rather about him? Newspaper reports say that he is being considered seriously as a candidate for Governor of New Hampshire next year. Since President Hoover has made such a success in the political game, it is recognized that professional men may be just the right material to put this game up to the proper level where it belongs. Perhaps '97 men may yet have the honor of addressing their classmate as "Mr. President."

A short account of Moore's activities is taken from the *Boston Globe* for October 10: "Mr. Moore has been largely concerned with the industrial problems, the engineering difficulties and the business enterprises of New Hampshire and is now director of research for the Brown Company of this city [Berlin, N. H.]. He was born January 3, 1872, was graduated from the Lynn grammar and high schools and later worked for the Thomson-Houston Company, now the General Electric Company at Lynn. He entered the Institute, supporting himself while a student by winding dynamos at Lynn. In 1900 he began his association with the industrial affairs of New Hampshire. He is the author of numerous scientific and business papers and has been President of the American Institute of Chemical Engineering. In 1920 he received the Gold Medal and in 1925 the Perkins Medal, both awards being made for extraordinary contributions to industrial chemistry. He has been a Director and Vice-President of the Guaranty Trust Company of Berlin, has served in the New Hampshire Legislature in 1922-23 and during the war served on the Naval Consulting Board, the War Industry Board, the Council of National Defense, and the National Research Council."

You will all be pleased to know that Walter Humphreys, who was formerly Registrar of the Institute and member of the Technology Corporation from 1923 to 1927, has been elected a Life Member of the Corporation, and is to act in the capacity of Secretary in the Corporation, a position occupied for so long by James P. Munroe '82, now deceased.

On September 9 the first reunion of the winter was held at the Boston City Club, in the form of a dinner in honor of our classmate, Arthur R. Franklin, who has recently been connected with the Bixby Manufacturing Company of Indianapolis, Ind., manufacturers of shoe polish. Owing to a reorganization of the company, Franklin has severed his connection with this organization, and at the time he was seen by the writer, he was endeavoring to make a connection with some concern in or around Boston. There were present at the dinner Franklin, Learned, Bradlee, Cowles, Hopkins, Hubbard, Ilsley, Mansfield, Styles, Lunt, and Jackson. It proved to be a very enjoyable occasion and we hope to have another like it in the very near future.

1897 Continued

You will all be interested to hear that John P. Ilsley is now with the firm of Eaton and Howard, investment managers, with offices at 1 Federal Street, Boston. This firm was the first to organize as investment managers, and is the only firm in Boston whose sole business consists of the management of investment accounts. They have nothing to sell but services, and have a professional and confidential relationship with their clients similar to that of a doctor or a lawyer. The complexity of the present financial situation is such that many investors seek the employment of investment managers with their analytical and research bureau of experts, whose services are available to any one on a rental basis. This affords the individual investor the same advantages in the scientific study of investments as are enjoyed by large institutions, such as insurance companies or men of great wealth. This firm has had wide experience in the investment field. They have many contacts, which have been no small factor in their success. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass. CHARLES W. BRADLEE, *Acting Secretary*, 261 Franklin Street, Boston, Mass.

1899

Charles B. Page has been appointed President and General Manager of the Steam and Combustion Company which has been organized and sponsored by the G. W. Dulaney Trust of Chicago, Ill., for the sale of high pressure boilers. The company is off to a good start.

Florian L. Lacaff has moved from Bethlehem, Penna., to Kansas City, Mo., where his address is Box 5852. Class notices will reach him there, we hope. — J. H. Richardson is now working for the Municipal Board of Water Supply of New York, and when we can find a mutually convenient time we will have lunch at the National Arts Club and bring our information up to date.

George Lynch, who went west, whether on Greeley's advice or not, I don't know, to Los Angeles, called on your Secretary in Washington on October 11. He specializes in smoke and fumes control, a field in which he has practically no competitors. He started east via British Columbia, on a combination business and pleasure trip, traveling through Canada down to Detroit and Chicago, on to Copper Cliff, Ontario, where he handled a dust control problem for the International Nickel Company. Thence he went up to Shawinigan Falls on a special assignment and finally reached Washington by way of New York. He and his family spent a couple of days in Washington renewing wartime acquaintances made while he was stationed here in 1918. He was en route to Birmingham, Ala., and would then travel westward through the South and the Southwest, and when he finally reaches Los Angeles he will have made the circuit of the continent.

William E. Parker gave a most interesting talk at a Friday luncheon of the Washington Society of the M. I. T., in

which he recounted some observations of the recent meeting of the International Hydrographic Bureau at Monaco. Parker is with the United States Geodetic Survey.

Arthur Brown motored through New England, New Brunswick, and Nova Scotia in August and visited the Haven Sawyers at Bangor and Billy Newell at Bath. Both had intended to go to the Reunion and both were prevented at the last moment. They expressed their disappointment, and Arthur retaliated by telling them what they had missed. Haven Sawyer is up to his ears looking after his silver fox ranch besides attending to his regular business in timber lands. Then, too, he is doing missionary and propaganda work in connection with the referendum on the question of permitting the export of power from the state, which question will come before the voters this fall.

It is with regret that I must announce the death of George Hume at Eastport, Maine, on June 3. Hume was formerly with S. B. Hume and Son of Eastport. — W. MALCOLM CORSE, *Secretary*, 810 18th Street, Washington, D. C. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

1900

At Brockton Fair in October the whippet classic took place, and Joe Draper had the satisfaction of seeing some of his dogs win places. Joe assures us that as far as the judges went there was no wool pulling. — The weather bureau promises us that June 1930 is to be fair and warmer, which is good news to those intending to take in the Thirty Year Reunion.

Bowditch sends in a nice letter of his summer trip. "On August 9 Mrs. Bowditch, my daughter Sylvia, my youngest son Charles, and myself left Chocorua, N. H., on an automobile camping trip to Quebec and the Gaspé Peninsula. My oldest son, Samuel, left ten days before to take a position in the geology department of the Cerro de Pasco Copper Corporation in Peru. Our car was a Beverly body Chevrolet, and by placing a partition in back of the middle seat all our tents, sleeping bags, and other outfit were carried in the back and nothing was tied on the outside except the desert water bag.

"We reached the St. Lawrence River on the third day and from then on we had a most interesting trip with fine views. It was cold driving along the river, but we made our camps inland where it was warm and where we were able to find fresh water. The people all spoke French and were very friendly. Before long we were able to make our French understood although it was a little rough in spots. The eastern end of the peninsula is mountainous and the road runs either along the shore under high cliffs or over the mountains, from the tops of which the view is extensive.

"The animals and birds must have roving natures, for most of them have wooden collars around their necks to

prevent them from going through the fences. We took pictures of geese, turkeys, pigs, sheep, cows, and horses wearing some kind of a contrivance to prevent them from getting out. We stopped at Persé, which is the most eastern point, and took a motor boat around Bonaventure Island, which is controlled by the government as a bird reservation. It has the largest colony of gulls, terns, and cormorants in Canada and the southern end was covered with rows of birds perched on the ledges.

"We crossed the river at Rivière du Loup to Saint Simeon, as we wished to stop at Murray Bay on our way to Quebec. The officer of the boat was rather doubtful whether we could get the car on as it was higher than most cars. I drove on slowly, and was much pleased to find that I had about an inch to spare. The wharf where we loaded was very narrow and most of the big cars had to be jacked up on the rear end and pulled around. A man with a Ford coupé got so rattled that it took him a long time to straighten out, and he went down the gang plank so fast that we feared that he would go out the other side of the boat into the river.

"We spent one night at Three Rivers and the next day went out to Grand Mère, and, through the kindness of the superintendent, were shown over the power plant of the Shawinigan Water Power Company. Eight 20,000 kw. generators were installed with an eighty-foot head on the turbines. We spent two days at Montreal in a hotel, and I decided that I was not brought up to appreciate the comforts of hotel life. Camping is good enough for me." — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1901

Just as we get Fred nicely settled in Paris with his family gathered about him and the children presumably making his acquaintance, his wanderlust asserts itself and after a hurried embrace of Mrs. Clapp, his own, and two of the neighbors' children whom he failed to identify, he is off again. Officially the citation reads as follows: "Frederick G. Clapp, consulting geologist and petroleum engineer, of New York and Paris, was a delegate of the United States Government, the National Research Council and the National Academy of Sciences to the Second International Drilling Congress which met in Paris, Nancy, Strasbourg and Pechelbronn from September 15 to 23. The Congress had a number of papers on oil, drilling, geology, and geophysics, and the oil wells and mines at Pechelbronn and vicinity were visited."

From this latest activity I assume Fred is also a member of the Tarriers' Union although he fails to mention this. For those who are to visit Paris in the near future he will be found from time to time at 28 Rue Poussin, which for the benefit of the uninitiate refers to young chickens. By the way, I am not featuring Fred in these columns, but his numerous

1901 Continued

activities coupled with the vivid coloring which they all possess grip the imagination of one who formerly regarded geology as sitting in the basement of the Boston Natural History rooms sorting rocks.

Bill Sweetser has been at the University of Maine for many years and is Head of the Department of Mechanical Engineering. As a result of the discovery by one of Bill's associates of the diabetic cornstarch to say nothing of the fundamental studies of another associate of the pleasing vigor imparted by ultra-violet light to the chicken — how we revert to this topic — the University is in funds. As a result of this latter pleasing condition the University completed a new mechanical laboratory building last spring, and since Orono is both near the Canadian border and more importantly, the town of Bangor, I presume Bill broke a bottle of champagne over its bow in the early summer. Anyhow they are now prepared to do anything there connected with mechanical engineering, a field of human endeavor of which the average graduate of Technology is profoundly ignorant. A really pleasant tribute to Bill's administrative capacity has been the installation of graduate courses in his special field and the first Master's degrees were conferred last spring. Mrs. Sweetser has been abroad for the past six months and during her sojourn visited the Island of Corsica. Both she and Bill collect antiques, and I imagine that she visited that sunny isle, which gave us the Black Hand and Napoleon brandy, for the purpose of getting a nice old vendetta with rich brown patina to decorate their modest home in Maine. Bill, as an expression of self-determination, has announced his intention of being a charter member of the Thirtieth Reunion.

D. L. Ordway has also wandered abroad during the past few months and writes from the shadow of Durham Cathedral. His principal problem during the summer, so he tells me, has been an earnest research toward an understanding of the operation of the average English hotel. He excepts the buffet from his otherwise sweeping condemnation. As a final touch of elegance he transmits a pleasing contribution to the class treasury in the form of English money, and the recent bear movement in the market is due to my effort to improve the rate of exchange.

Frank Cady has gone into an entirely new field of activity which was made possible by the closing of the research laboratory at Nela Park. He has become associated with the Metal Protection Company, but this cannot imply saving your money — page the new bills — for he tells me that he has purchased a new model A Ford and is studying its psychology. He says on the whole he thinks it is an improvement on that of its maker, which makes me think of a conversation that I overheard one day in front of one of the less fashionable restaurants in Boston which still adheres to the fine old practice of decorating its show window with luscious uncooked food. On this particular occasion two men, ob-

viously father and son, were gazing at the chaste outline of a little sucking pig which was the day's embellishment. Dashing tears from his eyes the older man said, "God, lad, I can scarcely bring myself to look at that, it reminds me so of you as a little baby." "Bear up, father," the younger man rejoined, "remember you have always told me that the younger generation begins where the older leaves off."

Those of you who took chemistry will remember Anna Gallup, one of our graduates in Course V. She is curator in chief of the Brooklyn Children's Museum, and as some of you never go across the bridge I am inserting a brief statement concerning the institution as I think it may be of interest to you. "The Brooklyn Children's Museum was the first institution of its kind in the world in 1902 when I came to Brooklyn. In 1929 the American Association of Museums listed sixty-one children's museums and other museums which have developed educational activities according to the Brooklyn plan. Recently the City of New York has added a tract of land 250 feet square and one building of thirty-five rooms to its equipment and increased its staff from seven to thirty people. The work of this museum has been described and favorably commended in the press of many foreign countries and attracts educators from every corner of the earth including Java, South Africa, Iceland, New Zealand, and many countries in Europe — this sounds like Fred Clapp. The museum now occupies two buildings, has an auxiliary organization of 1700 members that have contributed over \$100,000 toward its up-building, and serves 265,000 children in a year. It works in close cooperation with the Public School system and with the local Boy Scouts. Through this museum Technology has seven hundreds of thousands of children scattered throughout this country and other lands. Incidentally Boston established a Children's Museum in Jamaica Plain, after a Technology professor had made a critical study of the Brooklyn Children's Museum and another Technology professor joined him in recommending it."

This impresses me as an extremely interesting and useful work. Those of you who have grandchildren — Harry Gilson of whom more next month, has three — should take them over to see Anna and the museum. I do not qualify. — ALLAN WINTER ROWE, *Secretary*, 4 Newbury Street, Boston, Mass.

1902

Bassett is living at 15 Howland Road, West Newton, Mass. The New England Power Company with which he has been connected for a number of years moved its offices from Worcester to Boston a year and a half ago, but Bassett maintained his home in Worcester and practised long distance commutation until this spring.

Chandler Hovey, who is an ardent yachtsman, is a member of the syndicate of Boston sportsmen who are building

a cup defender to compete for the honor of meeting Sir Thomas Lipton's *Shamrock* next year in a contest for the America's cup. — FREDERICK H. HUNTER, *Secretary*, Box 11, West Roxbury, Mass. BURTON G. PHILBRICK, *Assistant Secretary*, 246 Stuart Street, Boston, Mass.

1903

On the invitation of the Secretary, a few of the Class got together at his estate in Milton, Mass., on June 15. Tennis, golf, and baseball were enjoyed in Milton, and later in the afternoon a number drove to Wollaston Beach for a swim. Lunch and dinner were served at the house, and the party broke up soon after dinner, having had a pleasant time renewing acquaintances and meeting the families of some whom were present for the first time. Jim Doran had his little surprise as usual, and presented pocket lighters to the lucky ones. The following made up the party: George M. Greene, Joyce, Doran, Gould, M. H. Clark, Jewitt, C. S. Aldrich, King, Lowe, Fred Crosby, and Cushman, all with their wives, some with their children, and Stiles and Peaslee who came unaccompanied, a total of thirty-two.

The Secretaries heard from a number of the Class while canvassing for ideas about the Reunion, and we can mention their names and location, even if little can be said about them in the way of news. Macgregor wrote his regrets from Richmond, Va., although his address is Lincoln, Maine. Chase writes from New York and expresses his sorrow not to be able to meet many of the Class. Maize wrote from Indianapolis, sympathizing with us in our task of getting the Class together, but is rather far away to drop in for the afternoon, and wanted to be remembered to those present. Swett and Howard at Technology were busy with graduation and examination duties and could not be at the Reunion. Garcelon from Longmeadow, Mass., hoped to be present. Whitcomb was changing his business connections and expected to be away more or less. Field, also from Longmeadow, was prevented by poor health, but sent his best regards. I wish we could hear from many others who have not been mentioned in the Class Notes since 1903.

Mortimer Y. Ferris has served as chairman of the Lake Champlain Bridge Commission, which brought to completion this summer the important task of building the Crown Point Bridge over Lake Champlain, which joins Fort Amherst, N. Y., and Chimney Point, Vt.

Dr. Catherine Blunt has been chosen President of Connecticut College for Women. Dr. Blunt, who has specialized in chemistry, had been a department head in the University of Chicago. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 35 Harvard Street, Worcester, Mass.

1905

You have read Frank Payne's travels to the Far East and Dick Senger's rambles in Europe. Bob Cutting, from whom

1905 Continued

nobody has heard for years, will tell you of his journeyings both east and west. Let her go, Bob. "Somebody described a civil engineer as 'an educated tramp.' He was more or less correct in my case. Your letter went to California and back, then to Paris and back here. I sailed from France on March 28.

"Since 1905 I have covered considerable mileage. I first went to Pittsburgh to work on the lock and dam system on the Ohio River and spent the next eight years helping to make the river navigable. In 1914, having somehow obtained a reputation for such work, I went out to Australia, as constructing engineer, to start the construction of a series of locks and dams on the River Murray in South Australia. It was a contract for three years and did not contemplate the completion of the system. However, I stayed for eight years, at the end of which I decided that it would be wise to return home, as staying longer would probably have meant remaining permanently, which I did not wish to do. In 1922, therefore, I arrived back here with Mrs. Cutting and our two Australian-born children, Elizabeth, born in 1915, and Mary, born in 1921.

"The work was most interesting. It was pioneering, for nothing like it had been done there before. Most of the machinery and a great deal of the material came from this country. The war having just started, brought along unexpected difficulties, which were quite pronounced at times, in a distant country depending on the service of ships which the Germans were doing their best to destroy. Work going along without some unexpected problems to solve soon gets monotonous, and monotony surely was absent from that job with its war conditions, floods, strikes, and influenza epidemics. We got over all the hurdles though." Bob's travels in the other direction will appear in an early number.

"It is our business to know our market. We must produce what people will buy; we cannot compel them to buy what we produce," said James P. Barnes, President of the American Electric Railway Association, at the annual convention in Atlantic City. So he was quoted in the papers. Words of wisdom? We'll venture they had a ring when Jim got them out in his dramatic way.

R. D. Gatewood, who for the last nine years has been in charge of the United States Shipping Board's Bureau of Maintenance and Repair, has ended his career of more than thirty years in the government's service to become general manager of the United States Salvage Association in New York. The Salvage Association has a membership of seventy-five outstanding American insurance companies and marine underwriters and holds surveys to determine the amounts collectable by American steamship owners for all damages sustained by their vessels. An idea of its scope may be obtained from the fact that in 1928 it held 5,300 surveys on American vessels in various parts of the world. Gatewood's new duties will place him in direct contact with the prin-

cipal marine underwriters and firms of adjusters, ship owners, and ship repair houses. The Association maintains offices in many principal ports of the United States and has offices and agents in more than 150 ports of the world.

You have probably heard that Doc Lewis is no longer Head of the Department of Chemical Engineering. Did Doc duck when he saw the Edison prize youth coming? — Harry Nabstedt has evidently completed the Garcia Dam in Mexico for he is now in San Francisco. — Dow Nicholson, formerly our only South Carolinian, has moved to Portsmouth, Va.

Your Secretary established his family in Center Harbor, N. H., for the summer and made occasional trips thereto. Once he stopped to see Grove Marcy at his Air Cooled Farm in Franklin, N. H. With a smile indicating pride of accomplishment, Grove handed us a package of honey, saying he was keeping bees as his latest hobby. But we think he was probably put out upon learning that Albert Gilbert had a larger orchard than he and was determined to excel at some farm sport. Is there any competition? We later discovered a California label on the box which may mean most anything.

Frank Payne concludes his interesting stories. "You remember in our time at Technology, naval constructors Furer, Battles, and Gatewood, studying naval architecture, drawing down thousands per year while we were paying for our education. We were very jealous of them at that time. Today, I cannot say that I envy their lot, living in the Philippines with the possible association of two or three other officers' families. This we know, however, they are doing their duty and are probably very content. The Asiatic Fleet, lying at anchor, was very impressive to me.

"The return voyage to the States, back to Hongkong, Shanghai, and Japan was very pleasant. The second visit to any of these cities is always the best. You feel more comfortable, and we certainly found many things to purchase and bring back for our home, such as porch furniture, linens, and silks. On the second visit to Japan we stayed ten days and had a splendid opportunity of studying the industrial conditions and meeting many officers of the Imperial Japanese Navy, who had been students at Technology and had returned to take up important positions. Admiral Goto'll became a warm friend during these negotiations. There were at least fifteen Japanese officers who had graduated from Technology in the past ten years. In September at the great Engineering Conference in Japan, there will be many Technology men, no doubt. I can only say that the education of a trip of this kind is well worth the time and expense.

"The trip back to the States, on the S.S. *President Jefferson*, was a great loaf and very pleasant. Another day at Honolulu, playing golf, was just a life-saver. Then came San Francisco and home." And so ends the three-part story by

Frank Payne to whom we should all feel deeply indebted. — ROSWELL DAVIS, *Secretary*, Wes Station, Middletown, Conn. SIDNEY T. STRICKLAND, *Assistant Secretary*, 20 Newbury Street, Boston, Mass.

1907

Try as hard as we can, we can find only two items to record this time. They both refer to members of the mining engineering course and both were furnished to us by members of that course. Carl Trauerman writes that Albert E. Wiggins of Great Falls, metallurgical manager of the Montana plants of the Anaconda Copper Mining Company, was recently elected to succeed the late Charles W. Goodale as chairman of the Montana Society of the M. I. T.

Sam Coupal sends us an announcement of the wedding of John P. Chadwick to Mrs. Marion Wilkins Desler in the First Presbyterian Church of New York on October 5. Chad and his bride will be at home after November 15 at Hotel Crillou, Santiago, Chile, South America. Congratulations to them both! Here's another one of our class bachelors who has recently married. Last month we told about Macomber. Who will be next? We still have a few left. Chadwick is in charge of the South American business of the American Smelting and Refining Company. — BRYANT NICHOLS, *Secretary*, 2 Rowe Street, Auburndale, Mass. HAROLD S. WILSON, *Assistant Secretary*, Int. Shoe Company, Manchester, N. H.

1909

It is with regret that we record this month the death, on July 21, of Frederick Jaeger III. At the time of his death he was associated with the Naval Powder Factory at Indian Head, Md. Jaeger was unmarried.

Garnett A. Joslin has returned from a trip of four months to Nicaragua. — Chet Pope is now in business for himself, manufacturing printers' inks at 333 Hudson Street, New York. — H. S. Pardee is with the Standard Automatic Signal Company of Chicago, Ill. — Tom Black is one of the partners of the Black and Eaton Mortgage Company, 208 South LaSalle Street, Chicago, Ill.

Mollie Scharff is President of the Main Aeronautics Company who have purchased a tract of land east of the City of Pittsburgh, where they will establish an airport, which, it is expected, will eventually become a port of national importance, supplementing Pittsburgh's two other airports. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, The Postum Company, 250 Park Avenue, New York, N. Y.

1910

Our friend, Chuck Almy, broke into the limelight recently in the Boston *Herald* as one of a series of "People You Ought to Know." The article relates how Chuck and Bradley Dewey built up a two million dollar business, the Dewey and Almy Chemical Company, in ten years starting from scratch. Almy has

1910 Continued

visited the majority of the countries of the world and every continent except South America. The Dewey and Almy Chemical Company makes ninety per cent of all the can sealing compound sold in the world. Incidentally, they are good customers of your humble servant, the Secretary. More power to them! — DUDLEY CLAPP, *Secretary*, 16 Martin Street, Cambridge, Mass.

1911

While the stock was roaring and staggering through its epochal twelve million share day on October 24, we had a great little get-together of '11 men in the Big City at the regular weekly luncheon of The Technology Club of New York, at which the speaker was Don Stevens II, who spoke ably on "Simplified Factory Management." Don, you know, is Vice-President and Works Manager of The Okonite Company, the Tiffany of the wire and cable trade, with plants at Passaic, Paterson, and Wilkes Barre. The classmates present were: Royal Barton VI of the Electric Bond and Share Company; Dennie Denison VI of The Lamson Company; Charlie Edwards XIII of the Hamburg-American Lines; Dick Gould XI from the Department of Public Works, New York; Tom Killion III, who imports and exports; and Dick Ranger XIII of the Radio Corporation of America. Dick, by the way, is still President of The Technology Club of New York.

I met Roy MacPherson II on a Boston train the other day and learned that he had had a fine trip to Europe this summer, visiting some of the foreign plants of the Cameo Record Corporation of which he is an owner. He touched at points in England, France, and Germany and took the trip alone. He and his family still live in Framingham, Mass. (where he and I were high schoolmates), and the principal manufacturing plant of the company is there.

Dick Ranger and his wife also had a European trip this late summer, spending six weeks in London and Berlin. Dick was over there in the interests of his trans-oceanic picture and facsimile sending via radio and most of their time was spent in Berlin.

George Forristall II has changed his line entirely and is now in the magazine game — shades of the Technology Press Association and its little office off Trinity Place, where several of us made our headquarters for writing Technology stories for the Boston newspapers in undergraduate days. George and his fine family of five have been in Houston, Texas, for some time now, and there they remain. In late September George resigned as advertising manager of Foley Brothers Dry Goods Company and became Vice-President and Business Manager of the Houston *Gargoyle*, a magazine in type somewhat like *The New Yorker*. A sample copy George sent me proved to be a very high-grade publication and we all surely wish him good luck.

A. Washington Pezet XIII, who is now with Horace Liveright, publisher, here in the Big Town is about to enter the play-

wright field as an avocation, witness the following from the New York *Times* of October 20: "A. W. Pezet, of the Horace Liveright forces, and Lothrop Stoddard, author of a recently published book on luck, have collaborated on a comedy in which Mussolini is somewhat concerned. Henry B. Forbes, they say, will produce the play."

Before these notes appear I shall probably have completed my work here in New York with The Lamson Company and will be once again back in the New England district — in good old Boston, long may she wave! The family was over here with me in New Rochelle throughout the summer, but we are all delighted to be going back to New England. So think of Minute Men and write to Dennie at Lexington. — ORVILLE B. DENISON, *Secretary*, 32 Reed Street, Lexington, Mass.

1912

It is with the deepest sorrow that we have to announce the death of Mrs. J. E. Whittlesley. Mrs. Whittlesley passed away early this fall after an illness of several years. Pete and his two children certainly have the sympathy of the whole Class. — Ralph M. Ferry II has been transferred by the Aluminum Company from Edgewater, N. J., to the East Kennington mills near Pittsburgh. The New York bunch will miss Ralph, who has always been a staunch supporter of every Technology and class activity in and around the metropolis. But they rejoice in the fact that it means for Ralph a more responsible and bigger job, as general superintendent of a group of five mills.

As these lines are being written, we understand that Bob Wiseman VI is due in New York on the S. S. *Bremen*, after a business trip of two months abroad for the Okonite Company. He has been in Norway in connection with the supply of the special quality paper used in the manufacture of paper covered cable.

And now we have to offer something which we believe will please and interest every member of the Class. We take some little pride in boasting that our perseverance has been rewarded and that we succeeded in getting our Class President, H. E. Kebbon IV to break a long silence, and give us a good letter, bringing us up to date on his history. Keb writes: "In reply to your special pleading for news of me I have set down a brief history of my activities and fortunes since 1912. After graduation I went into the office of John R. Freeman in Providence, and spent the next six months in visiting most of the larger universities and colleges in the country gathering data useful in the preparation by Mr. Freeman of a preliminary program for the new building for Technology. When Bosworth was chosen as architect, I joined him and helped develop the first plans, which were accepted by the Corporation. When actual construction work started I became the resident architect, returning to Boston, and during the next three years had charge of the preparation of the

working drawings and supervised the construction of the new buildings. In May, 1917, I left to take a position with the Construction Division in Washington, and in September I was appointed Captain in the Engineers Reserve Corps, assigned to the Construction Division to take charge of the building of Camp Meigs on the outskirts of Washington. This camp was completed in six weeks, after which I proceeded to New York to build Base Hospital Number 1 at Williamsbridge, completing it in five weeks. I was then ordered, in January, 1918, to Belvoir, Va., twenty miles south of Washington, to take charge of the construction of Camp Humphreys for the Corps of Engineers. From February to May the construction progressed to completion, until 30,000 men were housed in barracks. Over 6,000 civilian workmen were employed at one time, in addition to the assistance received from the enlisted men. I was promoted to the rank of Major, and in June assigned to special duty for the Chief of Engineers, designing a group of buildings for a permanent Engineers School for the Corps. After the Armistice I remained in the service completing my work until the following May, 1919. Upon receiving my discharge I became associated with Bosworth as a junior partner, remaining with him for two years. In June, 1921, I married, and after returning from a wedding trip in France, I opened my office at 522 Fifth Avenue in New York for the practice of architecture. My business has grown slowly but steadily, embracing country houses for the most part. In this connection, several years ago I built a house for Randall Cremer in Pelham. I have two children, Eric, age six, and Jane, a little past one and one-half years. My family and my profession are my absorbing interests, although I have kept in touch with the fortunes of Technology and have had interesting talks within the year with Everett Morss and the late J. P. Munroe about Technology's present and future. By the time the twentieth reunion year arrives it will find me eager to rejoin the men of 1912 in celebration, and in the meantime I extend greetings to all."

We are also fortunate in having a short letter from Sidney L. Day IV, who is located in Huntington, W. Va. Here it is: "I am still practicing architecture here in my home town. It is true I moved my office, but just from one building to the one adjoining. Just a few years ago Huntington had a big building boom and now we are feeling the effects. Building to amount to anything has practically stopped. You can see how the architects are fixed. However, we are hoping that this condition will not last much longer and that things will gradually improve." We are quite proud of the length of our column this month. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. David J. McGrath, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 10th Avenue and 36th Street, New York, N. Y.

1913

The genial Secretary dropped into the office the other day, during the absence of the Second Hand, and left a bunch of class correspondence received during the summer. The Second Hand should have been quite peeved, but the letters were so full of good news that all is forgiven.

Norman Clark comes to life with a delightful letter from Richmond, Va. Norm is now superintendent of one mill of the Standard Paper Manufacturing Company, which by way of explanation is the largest blotting paper concern in the world. He reports a net weight of 206, two healthy children, a boy of ten and a girl of three, and pleasant congenial circumstances all around. Let us hear again from Richmond.

This time we hear from the sticks. Allison P. Smith sent a chatty letter from Stowe, Mass. Smithy, as you remember, was the official custodian of our late class goat, won at the big Jambouree in 1925. The goat was not used to a life of ease and died from too rich a diet and too much luxury. Smith reports most crops are not so good, but every cloud has a silver lining, to wit, six husky young boys who make up the junior branch of the family. The youngest is nearly three years old. Well, anyway, the Smiths have the makings of a hockey team.

Fred Murdock's letterhead shows the Southern Weaving Company at Greenville, S. C. He reports several visits with Larry Hart at Kokomo, Ind. Larry left New York and went into business for himself in Indiana, becoming Treasurer of the Reiss Manufacturing Company. Now he is on the way to larger fields. Fred says Larry has not changed much since graduation. He is still full of pep and enthusiasm as he was in school. I wish we could hear from Larry directly.

Bill de Young Kay is still flourishing in New York as a member of Halle and Stieglitz, and incidentally, Bill is our first and only member of the New York Stock Exchange. Murdock and Bill had a pleasant meeting on a train early in the summer, hence this bit of gossip. Fred ought to tell us something about himself.

The Alumni Association makes the announcement of the death of Henry F. Bryant '87 last June. Mr. Bryant, as many know, was the father of our own Butsey. The two were in business together in Brookline, and Mr. Bryant Senior has held many offices in the Alumni Association. We extend to Butsey and his family our heartfelt sympathies.

Phil Capen had a pleasant visit with Stan Parker in Chicago recently. Stan has gone to Chicago from Boston within the last year, and was at first rather skeptical about that place. Now everything is fine and Stan thinks Chicago is great. He has taken to bullet-proof underwear as a duck takes to water.

Well, classmates, if this news interests you, send in your bit and we will do the rest. — GEORGE P. CAPEN, *Secretary*, 50 Beaumont Street, Canton, Mass. ARTHUR L. TOWNSEND, *Assistant Secretary*, Room 4-435, M. I. T., Cambridge, Mass.

1914

Clear October skies and crisp fall air must add to the lure of the great outdoors for '14 men, because only a single letter was received by your Secretary during that month. It was from Thorn Dickinson, who is now located in Boston. Thorn was called home from Poland rather suddenly by illness in the family, and on his return to the United States was transferred from Ulen and Company to Stone and Webster, of which the former is a subsidiary.

H. S. Wilkins soon after graduation forsook chemical engineering for mechanical engineering activities and has worked on the development of a number of machines. Last summer he joined the General Radio Company as mechanical engineer, and recently has been engaged in the development of a self-developing photographic oscillograph for cables and other special applications. — HAROLD B. RICHMOND, *Secretary*, 30 Swan Road, Winchester, Mass. GEORGE K. PERLEY, *Assistant Secretary*, 21 Vista Way, Port Washington, N. Y.

1915

A month has slipped by so quickly that we have not been able to arrange the opening dinners, but at last it looks as if we should have one in New York about November 21 and one in Boston the following week. So next month you will read all about it. Then we shall begin definite plans for our long anticipated Fifteenth Reunion next summer.

In New York recently I lunched with Louis Zepfner and at another time I attended the weekly Technology luncheon with Jim Tobey at The Fraternity Clubs. We saw Wilbur Swain there. Jim Tobey has just published another book, "The Most Nearly Perfect Food." He collaborated in this with Dr. Samuel J. Crumline, general executive of the American Child Health Association. In this valuable addition to the literature on nutrition they have told in a popular way the whole story of milk. Jim is very active in public health work.

Notice the short column this month. Don't let my cry for help fall on deaf ears. Send me in something about yourselves. If I could get all my news as I do that from Babe Hilton I'd take on this job exclusively. I spent a marvelous Sunday afternoon with Babe and Mrs. Hilton in Detroit. There's a lady for you, very much interested in class affairs and always solicitous that the Class Secretary be well dined and winned at her house. And I was not a bit hungry that afternoon. — AZEL W. MACK, *Secretary*, 377 Marlboro Street, Boston, Mass.

1916

Nathaniel Warshaw II is now chief engineer for the Lewis-Shepard Company in Watertown, Mass. They are manufacturers of hand elevating trucks, portable elevators, and other types of labor saving equipment. Nat is in his element designing special machines and thinks nothing of tossing five or six

thousand pound loads around in manufacturing establishments as though they were nothing at all. Nat does a great deal of traveling these days, and if you have some special handling problem just drop him a line at 125 Walnut Street, Watertown, and he will be glad to look you up when he is next in your vicinity.

Apparently a large percentage of the Class is moving these days, as is evidenced by the following changes in address. Wilfred A. Wyde has moved to 278 Pine Street, Holyoke, Mass. John S. McDowell is now with the Harbison-Walker Refractories Company in the Farmers Bank Building, Pittsburgh, Penna. Captain Albert C. Lieber, Jr., of the Corps of Engineers is now at Fort Humphreys, Va. David L. Jacobson now works with The Koppers Company, Koppers Building, Pittsburgh, Penna. Frederick K. Hine is in the office of Smith, Hinchman and Grylls in the Marquette Building, Detroit, Mich. Allen L. Giles lives at 62 Lovell Road, Melrose, Mass.

Your willing Secretary very much regrets the dearth of news this month. He would very much appreciate your sitting down and dropping him a line at once, giving such bits of news as you may have so that next month's issue may be more entertaining and instructive. — HENRY B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, 7338 Woodward Avenue, Detroit, Mich.

1917

"As the culmination of ten years of participation on the staff, Professor Harold E. Lobdell has been appointed Dean of Undergraduate Students at Technology." So runs the boldface type in the special extra edition of *The Tech* of October 10. I wish the same paragraph that appeared in *The Tech* might appear in *The Review*. It is a masterpiece. It looks like Mona Lisa's brother.

Newspaper releases, as well as *The Tech*, referred to the fact that Lobby was "a member of the famous Technology wartime Class of 1917. Numbered among its members are Lt. Albert F. Hegenberger, who flew from the Pacific Coast to Hawaii, the former Assistant Secretary of the Navy, Edward P. Warner, E. G. Gorrell, President of the Stutz Motor Car Company, James E. Wallis, Jr., American Trade Commissioner at Berlin, and Edwin P. Brooks, merchandise manager of the Sears, Roebuck Company. In this same Class were Harrison P. Eddy, Jr., of the firm of Metcalf and Eddy, consulting engineers, and the late Prince of Songkla, heir presumptive to the throne of Siam, and Arthur R. Brooks, one-time editor of *The Tech*, whose war record credited him with ten German planes."

To those who have been in touch with the work Professor Lobdell has been doing, the news does not come as a great surprise, even though the other two Deans were considerably older at the time of their appointment to this important position. In view of his youth and his habit of staying put, members of

1917 Continued

the Class having male progeny with Technology prospects will, of course refrain from wise cracks aimed at him from now on. Hereafter, in these notes, he will be referred to with the greatest respect and full recognition of his amazing dignity. His excuses for not being present at official and semi-official class gatherings must be taken seriously from now on. In all seriousness, he has our congratulations on this deserved recognition of his effort and ability.

These notes ought to stop here, but we must mention that Jimmie Doon has added another youngster to his collection. He is now engaged on his first case before the Bar against one of the best known Massachusetts attorneys, Frederick W. Mansfield, late candidate for Mayor, former President of the Massachusetts Bar Association, and so on. With the usual Henniker confidence, Jim expects to win his case. — Paul Leonard has been active in New England recently for the National Cash Register Company. — Hank Goudey XI called on Bill Eddy in September while on his vacation. At present he is resident engineer for the Los Angeles State Department of Health, Calif. His duties are overseeing sewage treatment works and water treatment works in southern California. We must now quote from Bill Eddy's letter about him. "He boasts of five young, two male and three female, and one Buick."

A Washington release by the Associated Press of September 9 has the following to say of Ken Lane: "Responsibility for checking designs and the structural safety of airplanes manufactured in the United States has fallen on new shoulders in the aeronautics branch of the Department of Commerce. "Kenneth M. Lane, aeronautical engineer, who designed the little Wright Apache plane in which Lt. Apollo Soucek of the Navy broke the world's seaplane altitude record last spring, now heads the Department's aircraft engineering section."

A daughter, Phoebe, was born to Mr. and Mrs. Kenneth Eldon Bell, making the present ratio three to one in favor of the girls in his family — George Montgomery Lovejoy, Jr., ex-bachelor, has joined the George H. Burr Company and has taken up the investment business as a new career. — RAYMOND S. STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

1918

We respectfully suggest to some of those eager youths about to enter the big wide world as experts in transportation, after being branded with the hall marks of cultured education by a Technology degree, that they turn their talents toward the humble business of moving furniture. That such a career offers both usefulness and profit is obvious, yes astounding, in the light of those thirty-odd changes of address which the Alumni Office has garnered from the fall meanderings of the Class of '18. To phrase it tersely, the boys are on the move.

Life is something which we experience but cannot fathom; which we live but do not understand. I suppose that few of us have not, at some discouraged moment when vitality ebbed low, felt like ending it all. That we did not do so is merely because courage and desperation were not as impellingly combined in us as they were in Morris Caust when he jumped from the tenth story of the Park Square Building.

The Boston contingent hopes to renew the happy custom of the monthly luncheons at the Engineers Club on Commonwealth Avenue. The last crumb of their first regalement will have been digested before this goes to press. You who live afar, but who make occasional journeyings to the home of the bean and the banned book, should note the third Monday as our day, and twelve-thirty as our hour. Join us, and reflect on how quickly the skull polishing of those bygone days has completely disappeared.

The pending census of 1930 has already been augmented by one, in the personage of a daughter, Joan, born on August 3 to Mr. and Mrs. John M. Hanley. May some budding youth in the not so distant as it seems future hold the census of 1950 to be all wrong; that there are not 62,000,000 women in the United States at all, but the one and only — Joan.

In sending in news for the Class Notes to your Secretary, please bear in mind that The Review Editors insist on having their copy at nine a.m. on the morning of the twenty-fifth. But if you have a human interest story of the first order we believe that the old time clock can be stretched to three p.m. So rub the old brass lamp, boys, and send us your blurb. — F. ALEXANDER MAGOUN, *Secretary*, Room 5-328, M. I. T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, 51 Houston Avenue, Milton, Mass.

1919

It falls to the privilege of few classes to hold a Tenth Reunion which for genuine spirit equals that of our Class early last June. When fifty-two Technology men lay aside their duties for at least three full days and travel, in some cases, from places as distant as Milwaukee, Wis., you may be sure they intend to stage a never-to-be-forgotten reunion. Well, they did, and I will try to tell you briefly what took place but I must leave something to your imagination since much that happened is personal and cannot be expressed in writing.

On Friday, June 7, the reunioners were met in Walker Memorial lobby and quickly changed by Gene Smoley and his associates from tired travelers to gay yachtmen by the simple act of topping off each man with a yachting cap. These caps, trimmed with the school colors and bearing the class numerals on the visor, served to identify the men and also to put the proper spirit into the crowd, since the Reunion was to be held for the most part at the Corinthian Yacht Club at Marblehead Neck. Wearing these caps and identification badges bearing their names, they wandered about the buildings and

renewed acquaintances with some of their professors. At one o'clock every one gathered in the Faculty Dining Room for lunch. Dean Lobdell and Bursar Ford each gave a little talk and each mixed facts and wit together in a combination that would delight any reunion luncheon.

Luncheon over, the gathering donned their sporty hats and with the abandon of small boys, clambered into waiting automobiles under the direction of Art Kennison, and all drove off by different routes to Marblehead Neck. No accidents were reported. The Corinthian Yacht Club, an ideal place in every way for an outdoor reunion such as ours, is situated on the point of Marblehead Neck. When all the cars arrived there, the real Reunion began and without delay either. Thanks to Bill Bennett and others, motor boats were available and several parties left the harbor and put out to sea, and with their white caps, they might have been taken by anyone for regular yachtmen. No seasickness was reported.

At the same time a memorable baseball game was in progress between the married men and the bachelors. It was a little difficult to find enough of the latter, but the game was finally carried to a successful conclusion by the determined efforts of Bill Banks. We learned of one party who spent the afternoon touring Marblehead Neck searching for this baseball game which was actually played over in Marblehead. The writer has a good glove left over from this game which he will gladly send to the owner if he will make himself known.

A splendid dinner was served at seven o'clock and was at once followed by group singing under the leadership of some professional talent. Art Griffin and Bob Bolan were in charge of the entertainment and none present, we are sure, will soon forget the fun. The balance of the evening and, in fact, up until the small hours, was used up by games of cards and billiards.

The reunion spirit evidenced itself early on Saturday morning and continued through the day. At least eighteen men played golf on a neighboring course and, judging from the remarks, they got into their fair share of traps and roughs. Unfortunately my records do not have the name of the winner, but with such men playing as Sheeline, Michelson, Barney, Bennett, Maynard, and Hackett, you may be sure the game did not lag. Tennis also received its full share of attention. Wirt Kimball won the tournament against such players as Winkfield, Way, Rasmussen, Goodridge, and Buzz de Lima, although some of the latter were handicapped by wearing oversize shoes. Water sports also were engaged in. A few went swimming although the water proved pretty cold, and others went boating. All the outdoor sports continued through the day, the only recess being for luncheon at the Club. A special banquet and entertainment under the able leadership of Art Griffin completed the day. Art introduced many celebrities but none more so than John P. Squire, chief officer of the Club, who was

1919 Continued

unanimously voted an honorary member of the Class. At this banquet Art also introduced a class ode entitled "Down on the Farm," and the writer will be glad to send the words to any *bona fide* classmate.

Sunday, the final day, was less formal and after breakfast the reunioners started to disband, some, however, remaining until after luncheon. At parting every one expressed his appreciation to Paul Sheeline and his committee for their excellent handling of the Reunion and their choice of location and stated that they looked forward to the next reunion. With hearty handshakes, the classmates parted still wearing their caps. The next issue of the Class Notes will contain some class statistics which were gathered at the Reunion.

Robert Insley has been made Vice-President and Chief Engineer of the Continental Aircraft Engine Company, a subsidiary of the Continental Motors Corporation. For a considerable period he served as assistant chief of the power plant division in the government Materiel Division at McCook Field. He is co-author of the book "Aircraft Power Plants," as well as the author of numerous technical writings on the same subject.

Please help me liven up the notes by sending me some material. You have some interesting item in mind at this moment. — WILFRED O. LANGILLE, *Secretary*, 144 Acme Street, Elizabeth, N. J.

1921

Merry Christmas and a very happy New Year to everybody! Somehow that seems much too premature this chill October evening. However, this is the last issue which will be in your hands well in advance of the Yuletide season. In wishing you good cheer during the coming year your Secretaries wish to call your attention to the suggestion that the Class advance the date of its Tenth Reunion to coincide with the All-Technology Reunion if the latter is held this coming summer. Comments on this arrangement will be welcomed.

It is with the greatest regret that we report the death of two who were associated with us. On September 26 the death was reported of Somdet Chao Fa Mahidol, Prince of Songkla and brother of the present King of Siam. The Prince, who was in the line of succession, was thirty-seven years old. He attended Harvard and the Institute, receiving his C.P.H. in the School of Public Health, Course VII. While in Boston he met Sangwan Talapat, a countrywoman of his, and later married her on his return to Siam.

The death of Oliver VanPatten Smith II was reported on October 1 in Boston. A native of Winchester, where he was born thirty years ago, he received his A.B. degree from Harvard and then continued his work at the Harvard Engineering School and at Technology. For a time he was with the Saco-Lowell Shops and the Gillette Safety Razor Company, later moving to Minneapolis where he

was associated with the Minneapolis Heat Regulator Company. In 1925 he married Miss Rachel Daniels of Plainfield, N. H., and following her death in Minneapolis he and his young child returned east. He is survived by his parents, Mr. and Mrs. F. Patterson Smith of Winchester, and three sisters.

The fall appointments announced by the Corporation include the name of J. L. Entwistle VI, who has been elevated to the rank of Assistant Professor of Electrical Engineering. Congratulations, Jim. Another instructor in the Electrical Engineering Department, H. M. Lane VI is managing to spare enough time from studies of "How to Make Problem Sections Longer and Harder" to design, develop, build and operate a television outfit. Our informant tells us that it is rumored that a group in Building Four is aiding Hank in the work of developing satisfactory means of transmission of vibrations which will contribute to the olfactory as well as to the visual and aural senses.

A note from the Alumni Office says that W. A. Swett X is attached to the general merchandise office and has charge of the unit stock control division. It neglects to say within whose merchandise office Bill hangs his hat. Our latest information would have it to be the A. L. Smith Iron Works of Chelsea, Mass. How about it, Bill? — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, South Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, Bell Telephone Laboratories, Inc. 463 West Street, New York, N. Y.

1923

If it wasn't for the wedding announcements, I'm afraid we would have to close up shop entirely this month. As it is, we have very few items to offer. Bob Shaw, who was about to be married when the November notes went to press, safely embarked on the good ship *Matrimony* on October 26. He married Miss Marian Dean at Bath, Maine. Bob and Mrs. Shaw will make their home in New Jersey. Norman Weiss was married last August to Miss Mary Duffus of Parrall, Mexico. We haven't heard from Norman for a long time, but he is evidently still located in Mexico. Another announcement from Maine was received through Professor Locke. He informs us that Frank Knight was married October 19 to Miss Laurestein Foster of Norway, Maine.

We understand that Frank Gentry, who for several years very ably reported the doings of Course XIV, has left the New York Edison Company and is now connected with Lehman Brothers, New York bankers. — In looking over the headquarters bulletin of the American Tel. and Tel. Company, I ran across the name of R. N. Goetchius. It seems that Goetchius has been transferred from the long line engineering to the plant engineering department of the company. His new job will deal with transmission problems.

Now, in closing, let me plead with you for some news. Drop me a line about yourself and any other '23 men that you see. — ROBERT E. HENDRIE, *Secretary*, 91 Walnut Street, Braintree, Mass. HORATIO L. BOND, *Assistant Secretary*, 37 Concord Avenue, Cambridge, Mass.

1924

It is a long cry from the beginning of winter back to the beginning of summer and the time of our first in a series of successful five-year reunions. Ask anyone of the seventy-five who were there, at one time or another, if it wasn't successful. Some could come only to the Friday luncheon in Walker and some didn't get there until late Saturday. One, John Duffy, arrived quite unexpectedly (to himself) on Saturday. New York, Boston, and Philadelphia had the largest representation, but Pittsburgh, Chicago, Los Angeles and a large number of way stations including Hartford were there. Hartford was 100 per cent present since Bob Reid, Bump Brown, and your General Secretary were there.

The guiding lights of the Reunion to whom the credit must go were Bill Correale, Bill Robinson, Gug Shea, Chick Kane, George Knight, and Charlie Phelps, and they certainly put on a party. The first item on our program was the luncheon in Walker where our guests were Professor Franklin, Professor Pearson, Professor Lobdell, Professor Miller, Bursar Ford, Coach McCarthy, and Wallie Ross. The afternoon was spent in strolling around the grounds, and I don't believe there was one who missed inspecting the new Aeronautical Building. At five we were the guests of President Stratton at tea, and he most kindly posed with us in his garden while the reunion picture was taken.

From there we progressed to Marblehead and the Corinthian Yacht Club for more food and thereafter a long night of renewing old acquaintances, talking things over, and et ceteras (lots of et ceteras). Saturday morning some went golfing, some played tennis, and others went sailing. In the afternoon quite a crowd went motorboating. Henry Simonds was skipper until he got us out in the very middle of the ocean and started to turn back. It was so much rougher coming back that he reluctantly turned the controls over to the Corinthian's skipper.

Saturday night the grand banquet and the movies of the Institute with sound effects by the audience took place. Nip Marsh presented the astounding news that the Beaver was not dead and would be presented by this Class at Field Day if the spirit was high enough. Speeches and stories were presented by the assembled members. Gug Shea was the salad orator. An unaudited census was taken to determine the average salary of those present — average \$4,400, high \$12,000. Officers for the next five years were elected as follows: President, Bill Robinson; Vice-President, Charlie Phelps; Treasurer, Bill Correale; and General Secretary, Hal Donovan. On Sunday the farewells were taken until 1934.

1924 Continued

Bill Robinson has left New York and gone to Schenectady as this excerpt will show. "With the recent consolidation of the lighting and cable divisions into a single division within the central station department of the General Electric Company under the management of F. H. Winkley, W. H. Robinson, Jr., was named manager of sales of the lighting section." — Professor Waterhouse says that while in New York recently he had the pleasure of meeting Frank W. Warren, a graduate of Course III, who has been in New York for over a year in the sheet metal business, making ventilators and things of that kind with his brother-in-law. Apparently he has let the petroleum business go for a while at least.

E. B. Davidson at 32 Lawnridge Avenue, Albany, N. Y., writes: "I am now located in Albany with The Barber Asphalt Company, covering the State of New York as their representative in the street and road department. I have been located in Albany for slightly over a year and returned to Chicago last December, getting married to a Chicago girl on December 22, 1928. We spent Christmas in northern Michigan and drove back on our honeymoon, stopping off for a few days with Windy Hammond and his wife. Windy is otherwise known as E. W. Hammond of the Class of '22. We are now permanently settled and expect to be so located for some time, and would welcome any classmates looking us up when in this vicinity. They can easily find the number in the telephone directory and we always have extra accommodations."

I have also a letter from Paul Cardinal, parts of which I will quote. "On June 26 I was married to Miss Lorene F. Lapham of Paterson like myself, much to the apparent satisfaction of the several hundred folks who looked on. After a reception at the North Jersey Country Club, the newly incorporated 'We' skipped off to a honeymoon consisting of a sail to Yarmouth, Nova Scotia, thence by train to Halifax, where we boarded one of the Canadian National's brand-new cruising ships, *Lady Drake*, for Bermuda. There we stayed for fifteen days at the Hotel St. George, overlooking the beautiful harbor of St. George, ending it all with a sail back to New York on the Furness Line's palatial motorship, *Bermuda*. I had been given a month's vacation for the purpose. Now we are living at 444 East 41st Street, Paterson, N. J.

"My business address has also changed, but this does not involve any change in jobs. The boss thought he'd do me a favor when he heard I was going to locate again in Paterson after being married, so he very conveniently decided to build a new million dollar plant right near by, so I can get more sleep nights. It's no longer the Hoffman-LaRoche Chemical Works of New York City, but just plain Hoffman-LaRoche, Inc., of Nutley, N. J. — fourteen miles from New York and a fifteen-minute drive for me each morning."

C. G. Rudderham is attached to the Chicago Retail Regional Organization.

He is operating manager of their B (small) stores in that region. — I have a card from Norris Johnston of my own Course announcing the arrival of John Beverly on August 11.

And then some clippings. From the Boston *Herald* of July 10 is taken the announcement of the wedding of Miss Eleanor Johnson, daughter of Mr. and Mrs. Arthur C. Johnson of 6 Merton Street, Newton, and Philip Knight Bates of Dayton, Ohio, formerly of Plymouth. The bride is a graduate of Wellesley College in 1923 and Philip Bates received the degree of Ph.D. last January from the Institute. After a wedding trip they will live in Dayton.

From the Boston *Herald* of June 23 comes the following: "A cablegram received in Wakefield announces the marriage in Jonkoping, Sweden, of Miss Edith A. Palm, daughter of Mr. and Mrs. Arvid N. Palm of Beverly, and Ralph Alden Reid, son of Mr. and Mrs. George W. Reid of 8 Cedar Street, Wakefield, Mass. . . . The couple are now touring Norway, Sweden, and Denmark."

The Boston *Evening Transcript* for July 2 reports: "The marriage is announced of Miss Hazel Ellen Kennerson, daughter of Mr. and Mrs. Joseph Kennerson of Cliftondale, to Herbert Alva Laffer of Plainfield, N. J., son of Mrs. Ida Laffer of Rochester, N. Y. The ceremony was performed on Sunday in the home of the bride's parents in the presence of the immediate families and a few intimate friends. After July 15 Mr. and Mrs. Laffer will be at home at 300 West Seventh Street, Plainfield, N. J." — HAROLD G. DONOVAN, *General Secretary*, 139 Girard Avenue, Hartford, Conn.

COURSE I

Russ Ambach favored us with information, news, and philosophy during the summer. He was at that time persuading the denizens of Omaha, Neb., to buy his Pennsylvania rock crushers. He writes that southern Illinois, Indiana, and western Kentucky are usually his proper territory with occasional dashes to Birmingham, which city still fascinates and lures him. He reports Joe Lockwood of Dixie Construction Company fame to be sober and single, but probably receiving considerable pressure from Oakler, Benedictine, and Charlton. Also from southern Illinois and western Kentucky, Theron Bailey reports the final completion of the canalization of the Ohio River by the United States Engineers in which he has played an important part. Bailey has been the right-hand man for J. T. Grigory, superintendent in charge of several of the largest and most difficult navigation jobs in the Louisville district. This has meant valuable training and experience on the construction of moveable dams under an expert. Evidently he now has a somewhat permanent maintenance job in this district.

Harold Banks is making hay in Cleveland with the firm of Coolidge, Shepley, Bulfinch, and Abbott, architects, of Boston. Steel, concrete, long horns, and

lots of money no doubt are Banks's daily fare. He is directing most of his efforts toward the \$1,800,000 Nurses' Dormitory, one of the new buildings in the Cleveland Hospital group. He was married on February 23.

Don Moore has hidden himself away from at least two of his friends only to turn up, the gossip says, in the design department of the New England Power Construction Company in Boston. The new job will be rest and recuperation for his legs and traveling bag, and activity for the slide rule and handbook once more.

Your Secretary severed his connection with Chas. T. Main, Inc., of Boston at the first of the year to accept a position with the Charles B. Hawley Engineering Corporation of Washington, D. C., a firm of consulting engineers engaged almost exclusively in water power work. The firm is at present engaged in some very interesting design work in connection with a 650-foot head development in the Philippine Islands.

George M. Tapley has also been connected with the Charles B. Hawley Engineering Corporation since the middle of September. Previous to this he was connected with the United States Engineers Office in Savannah in the capacity of assistant engineer. I am indebted to him for part of these notes.

Ed Winger was married to Miss Ruth Helen Douglas on June 1 in Asheville, N. C. Ed is still one of the mainstays of the Barney-Ahlers Construction Company in New York. — Sam Schultz wrote a very interesting letter from Dresden, Germany, under the date of April 19. Sam has been spending the past year traveling in Europe under the auspices of one of the Freeman scholarships and, unless his plans have been changed, should soon be back in the States. He has had a wonderful opportunity for study and inspection in the hydraulic laboratories and engineering works of Germany. Apparently Sam has not limited himself entirely to technical research, for he writes of having purchased a university song book with a washable cover and a little wooden knob at each corner to protect it from the beer on the table.

A letter from Larry Feagin brings the information that he is still in the United States Engineers Office in Florence, Ala. Larry is now an associate engineer and for the past year has had charge of the engineering section. — JOHN D. FITCH, *Secretary*, 1132 Munsey Building, Washington, D. C.

COURSE VI

I don't believe that even a Congressional probe committee could succeed in prying less authentic news out of Course VI than has come to the surface during the summer. Apart from the Reunion, I have encountered so few of the boys that I am almost inclined to believe that they are all traveling in disguise, possibly on account of the fact that I ran into Jay Buswell on the street a few weeks ago and had great difficulty in recognizing his usual genial countenance

1924 Continued

behind a Czar Nicholas moustache. Bus told me a little news, among which was the fact that Doc Daily was in town a few weeks ago. Doc is hereby reprimanded for being within a block of the Secretary and not giving him a call. While this scribe job does not carry a liberal expense account for the entertainment of visiting Pittsburgh men and other classmates, we'd be so tickled to hear from the old gang that we could probably be shaken loose from an invitation to lunch, at least.

Up until about a year ago, announcements of engagements, weddings, and subsequent arrivals of junior partners used to arrive often enough to get us into *The Review* once in a while. Lately, however, there just isn't any news. We don't know whether it is because everything of importance has already happened, or just that the boys are having difficulty in adopting Tubby Rogers's advice to break into business by marrying the boss' daughter.

Our records of such adventures bring the boys up to date as of June, 1928, so I wish those who have had the good breaks since then would send in the glad news. Just to make it easy, I'd suggest that you answer the following questions. When did you get married, and to whom? Are you glad of it? Where do you live? Is your wife a good cook and does she like company for dinner? In any event, send in some news for next month. — F. A. BARRETT, *Secretary*, 38 Foster Street, Arlington, Mass.

COURSE X

There are several events of great importance to announce this month. Jean Withers Coleman was born on April 5 to the once upon a time Laura Withers of Wellesley and your humble Secretary. So here's to a future stroke of a Wellesley crew. Sylvia Hall Mackie was born April 18 to Bob and Mrs. Mackie. Mrs. Mackie, you will remember, was Ed Hewitson's sister. So this is nearly an all Technology baby. Betty Adelaide Acker came to town September 25, to see her parents John and Mrs. Acker. Three girls in a row. Thank God for that! They will never have to go through what we men went through just before they were born.

Mr. and Mrs. William Emerson announced the marriage of their daughter Beulah Marie Hulsebus to Theodore Eames Simonton on Saturday, August 31, in New York. Congratulations, Ted! We rather expected it when we saw you at the Reunion last May. Ted left Technology in our junior year to go to the Patent Office. By studying law at night for four years he passed his Bar examination in New York State. He is now employed in a patent law office at twice the salary this graduate of Technology gets. All of which brings up the salary question again. According to the facts unearthed at the Reunion, unless you are making \$4,400 per year you are below the average of those attending the Reunion. So out to your bosses to get your raise or to throw off your

chains. Remember one \$400 a month chemical engineer is worth a half dozen \$200 a month dishwashers. Write to Tubby Rogers. He knows all the other secrets of success.

Clif Bailey is doing finely at du Pont's. It was good to see him again when he came up north to be Joan's godfather. Bunk Marden is married and I think he has some children, although I am not sure of all I heard at the Reunion. He is selling for the American Laundry Machine Company. Tom O'Brien was there too, and I wish that he would tell us something about himself. Kendall, who is foreman of the floor tile and hard rubber department of Hood Rubber Company in Cambridge, was also at the Reunion. — WILLIAM B. COLEMAN, *Secretary*, 52 Liberty Street, Arlington, N. J.

COURSE XV

We are happy to have several marriages to report. The first of these is that of Web Brockelman and Miss Nina Estelle Minton, which took place on June 7 at Longview, Wash. Then there is that of Phil Blanchard and Miss Elizabeth Evelyn Burris, which occurred July 3 at New York City. Gene Quirin and Miss Etienne Noury were married on August 14 at Manchester, N. J. Dick Holt and Miss Dorothy Agnes Smith were married at Burlington, Vt., on August 17. Pret Littlefield and Miss Margaret Stuart Meredith were married on July 19 at Balboa, Canal Zone. The list is as we have it. If there are omissions, we apologize and request information at once. Congratulations are overdue but heartily extended.

Gardner MacPherson and Bill Giddon have been recent visitors to Boston. — The famed auto man, Syd Doyle is dispensing Oaklands and Pontiacs from Doyle Brothers Garage in Dorchester, Mass. — Frank Storey is now a buyer for three departments of Jordan Marsh Company in Boston. — Frank Shaw is selling in the Detroit territory for Rustcraft cards. — Ludwig, we understand, has gone to Holton, Maine, to practice financial wizardry. — Blay Atherton, looking well, we saw at the outing of the Technology Club of New Hampshire this summer.

At our first Five-Year Reunion, of which you may have heard rumors, this Course was well represented. If and when the writer saw correctly, there were visible at various times Sam Grahame, Gene Cronin, Charlie Phelps, not to mention Jim Pierce, Gordon Wayne, Bill MacCallum, Pres Scott, Bill Rowe, Wink Quarles, George Parker, Ray Lehrer, George Knight, Carl Bartow, Roland Black, Santa Claus, Tarzan, and Little Eva. Here again, we might say that we are probably in error. In fact, we will say that we are probably in error.

We are still holding forth in this Citadel of Censorship and would welcome personal visits, letters, wires, pigeon messages, and what not, in fact, anything except requests for financial assistance from any of you. We enjoy

being surprised. — JOHN O. HOLDEN, *Secretary*, Room 11-203, M. I. T., Cambridge, Mass.

1925

This is the lean month for notes, when everyone has finished talk about his plans for the winter. Courses II and V are the only contributors; and I would suggest to all of you that you write to your Course Secretary once in a while to let him know what you are doing and what your friends are up to. Then we would have a good set of notes each month.

Don Wheeler is still in Hudson Falls, N. Y., but gets in a trip to New York or to his home once in a while. — I had a card from Bill Herbert recently announcing the birth of Patricia Herbert. Bill and his family are living in Franklin, La. — My address file and other class records are either lost or mislaid somewhere between here and New York. I hope they show up before the next Review notes are due. — FRANK W. PRESTON, *General Secretary*, West Virginia, Pulp and Paper Company, Piedmont, W. Va.

COURSE II

Seek and you shall find seems to be a necessary course of procedure for the Course, but it is productive of results. As for instance, I sought Ed Mason in Walpole, Mass., and was very glad to receive a letter from him, postmarked Toledo, Ohio. Says he, "Your note was forwarded to me at our New York office, which is my headquarters. I am now with the Toledo Precision Devices, Inc., a new subsidiary of the Toledo Scale Company. This is a brand-new company and being in on the ground floor, so to speak, looks like a fine proposition." So you '25 men who are in New York, I would suggest that you obtain your precise weight at the office of our own Ed Mason at 242 West 55th Street, New York, N. Y.

I'll have to do some more seeking to bring the rest of you from your hiding places, or else hopefully twiddle my thumbs for another month, anticipating your flood of letters. How about it? — NELSON D. MALONE, *Secretary*, 184 High Street, Boston, Mass.

COURSE V

It is getting to a point where I view the approach of the twenty-third of each month with extreme misgivings, inasmuch as these notes are due on that date. I swear I've never seen such a group of nice young men, as Course V affords, who are so lacking in news value. I wish some of you lads would bite a dog or give yourselves up as the murderer of Arnold Rothstein. Anything at all will do if it has news value. I'm sure some of you are getting married or doing other things.

Your attention is called once more to my new address as indicated below. I'm very anxious to greet any of you who are passing through town. My records do not give any of you as living in the Metropolitan District. However, I think I heard that Fred Kranzler was in New York City among others. I hope Fred sees this and communicates with me.

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I can promise some very nice entertainment if any of you care to stop over with me. I've got a very neat little place, all my own, furnished in the late Grand Rapids style. There is one drawback, however. Along about three in the morning this gosh-awful smell permeates the neighborhood, coming from a battery of incinerators over in Brooklyn. The air becomes odoriferous in the extreme when the wind is right, and I'm at a loss what to do. Henry Sachs radios all the way from Johannegeorgensstadt (gargle that one) to filter all incoming air through some oxidizing material so as to stop up the -ous form to the higher valence. Henry asserts that the smell thereby becomes odoriferic and much easier to put up with in consequence. He is still at large, I believe. Are there any other suggestions? — GERALD MILOT Secretary, 4306 45th Street, Long Island City, N. Y.

1926

A concerted drive seems to be on this year to enlarge the married men's battalion. Fourteen marriages have come to light in last issue plus this issue. Last year only nineteen marriages were recorded during the whole year, the previous year produced only seventeen, the first year after graduation again nineteen. These figures are challengingly low, but the rate is picking up encouragingly. Compared to a total of 548 graduates in the Class, sixty-seven marriages seem inadequate. Of course, there are many that have not been reported to the Secretaries.

Since graduation eleven members of the Class have died, an appalling number. It must be remembered in comparing totals, that non-graduates of the Class totaled 679, making a complete roster of graduates and non-graduates registered in the 1926 file of 1227.

Der Konvergenzpunkt has garnered in the following wedding announcements: William Ward Hicks, Jr., to Miss Eleanor Galbraith of Pueblo, Colo. — Theodore Taylor to Miss Dorothea Dow of Brookline, Mass. — Robert Frederick Flaxington to Miss Leona Adams Besse of Wollaston, Mass. — Allen B. Bassett to Miss Barbara Bradshaw Aldrich of Bridgewater, Mass. — Edgar F. Stevens to Miss Marion E. Parsons. The Secretary offers the best wishes of the Class.

The following engagements have been announced: James T. Henry to Miss Mary A. McCusker; William Borghesani to Miss Mary Seccola; Frederick Paine Broughton to Miss Mildred Alma Smith of Peabody, Mass.; and Arthur E. Keay to Miss Dorothy Blackmer of Plymouth, Mass. Congratulations are proffered to all.

Word comes from Charlie Rich that he is located at 10 Stark Street, Nashua, N. H., he is employed as personal assistant to the owner of Gregg and Son, an old established concern producing millwork of all kinds. It is the largest plant of its kind in New England. — J. R. KILLIAN, JR., General Secretary, Room 11-203, M. I. T., Cambridge, Mass.

1927

As we told you in the November issue, we had a number of items which we could not include because we had temporarily mislaid our notes. In this issue we will try to include everything.

The following is the gist of a letter received from Jack Peters last July: "Just a few facts that may be of interest to you. Four members of our Class entered the Harvard Business School the fall after Commencement. George Cunningham, who had a degree from Princeton before he came to Technology, only planned to take the first year at the School. The other three, Morgan Collins, O. W. Willmann, and myself all survived the rigors of the school and got our degree last month, Collins getting his 'with distinction.' Collins is staying on at the school on the instructing staff for a year and I am going into advertising work in New York. I don't know what Willmann's plans are." Your Secretary saw Morg Collins only two weeks ago. He reported that everything was going well with him.

We mentioned last month that our Course XV Secretary, George Houston, was married during the summer. The wedding was on the evening of August 24 at the Church of the Redemption in Boston. The bride was Miss Mary Bullard Saunders of Brookline. She had attended Jackson College and was graduated from the Erskine School in 1927. After the wedding, there was a reception at the Hotel Beaconsfield in Brookline. All members of Course XV are respectfully requested to address their congratulations to George at 445 Central Avenue, Orange, N. J. Another fact worthy of mention is that George, loyal Scot, was listed in the Boston *Evening Transcript's* account as 'a native of Paisley, Scotland.'

We also mentioned in the November issue that Ned Anderson was married. The wedding took place on September 7 at the Shakespeare Society House on the campus at Wellesley College. Miss Van Horsen lived in Newton Center and was graduated from Wellesley College. They are now at home at 91 Rose Street, Jamaica Plain. Your Secretary, negligent bum, has not yet been out to call upon them. When he does, he will extend the formal congratulations and best wishes of the Class.

Early in October we had a visit from Bud Fisher, who is about to be transferred from the Standard Oil plant in Baton Rouge, La., to a new plant in Elizabeth, N. J. Bud reported that John Collins is to be married on November 9. Subsequently we received official confirmation from the parents of the bride-to-be. She is Elizabeth May Hart of Lawrence, Mass., graduate of Connecticut College in the Class of 1928. The wedding will take place in Lawrence.

Marshall Jennison is now at home with Mrs. Jennison at 420 Memorial Drive, Cambridge. Previous to the wedding on October 15, she was Miss Cynthia Lamb, a graduate of Wellesley, who was doing graduate work at the Insti-

tute last year. Jenny, of course, is still an instructor in the Department of Biology and Public Health, under Professor Prescott.

Thanks to the clipping service to which The Review subscribes, we have six other weddings to report. Miss Helen Tidball Reed, of Boulder, Colo., was married to Prentiss I. Cole of Evanston, Ill., on April 17. The couple left immediately for Balboa Beach, Calif., where Prentiss is located with a nationally known oil company. — Miss Ruth Drucile Rickaby of New York was married to Louis J. Darmstadt on May 19. — Miss Doris Heath Whitney, of Brookline, Mass., was married to Donald Lyman Ross of New York and Flemington, N. J., on June 13 by the Reverend Henry Knox Sherrill. Mr. and Mrs. Ross toured Canada and several western states by automobile and will reside in Springfield. — Miss Lillian May Roberts of Boston was married to Edward Elmer Mott of Tulsa, Okla., and New York, on August 10. They will make their home in Montclair, N. J. — Miss Pauline Patz of New York was married to Edward Sanel of Concord, N. H., on September 29 in New York. — Miss Kathleen R. Lee of Allston, Mass., was married on June 15 to Charles Gay Drew of Dorchester, Mass. The Secretary offers congratulations from the Class to all these happy couples.

Other news concerning vital statistics must be left till next month because of lack of space. — JOHN D. CRAWFORD, General Secretary, 7 Goodwin Place, Boston, Mass.

COURSES I AND XI

Al Hall was married on June 28 to Miss Clara Butterfield. Congratulations, Al.

John Drisko wrote me last spring as follows: "... We ... left Berlin on May 7. We made Prague the first day. Czechoslovakia is quite interesting. Prague is a boom town — they are tearing down numerous old buildings (a rare sight in Europe) and putting up new ones. We were told that over 4,800 buildings of all sorts were under construction in Prague. We even saw one residence which was alleged to be a copy of the White House. One needed a high-power magnifying glass and a big imagination to see the White House. That's just one of the ways the Czechs are being Americanized. While we were there they were cutting in a new water supply and for some reason water was awfully scarce, even water to wash in.

"Then on to Vienna. This is a marvelous town. The people are 200 per cent polite, and life seems at its easiest there. Austria is all around enjoyable. We crossed the Alps at the Semmering Pass, but didn't see much, as it was raining. In two driving days from Vienna, we reached Venice, which is delightful, but no town to enjoy alone. The Lido is all wet and the beach is punk. I guess it must be the life there that is so nice. After I got back to Berlin I found out that Professor Barrows was in Venice the same day I was. I didn't know it at the time and of course we didn't see each other. The

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roads in Italy were the best we found, but we encountered very few bad roads anywhere. The roads are mostly gravel, which may be very dusty, as we had occasion to observe.

"We stopped in Florence a day, and saw a lot of art. The coloring in some of the paintings was wonderful. You can hardly believe that they were actually painted, and hundreds of years ago at that. A lot of the Italian architecture didn't appeal to me. In general I'd say I prefer to eat my gingerbread rather than look at it. In Venice, though, there are some wonderful things. The Italians knew the value of rows of arches, and they have wonderful marbles to use as building material, which helps. Rome left me with a mixed feeling. There are some wonderful things there, and yet I was disappointed in other things. The ruins in Rome didn't impress me as much as those on the island of Visby, in the Baltic. The streets are more tangled than those in Boston. The Chianti is a bit better than the Dago Red sold in Boston.

"From the point of view of natural beauty, Italy is fascinating. Coming in, from Austria, we drove along a very picturesque valley. The river bed was from 100 to 400 yards wide, flat as one of Dick Shaw's flannel cakes, and consisted of white stones and gravel, glaring white in the sun. The little bluish-green stream wove back and forth across the flat bed, sometimes hugging one bank, sometimes the other, and sometimes venturing out into the middle of the broad white expanse, where it perhaps split into smaller rivulets. The white river bed, between the steep mountains on either side, was in great contrast to the dark trees on the hillsides and to the drab gray stratified rock of the bare mountains. The road, and also the railroad, twined along just above the riverbed, clinging on to the mountain side as though afraid of falling off. Crossing the Apennines, the mountains were very barren, almost no foliage, and the soil a drab, gray-brown color. Peculiar streaks down the mountain sides showed where heavy rains had washed deep into the gravel.

"The people who took me down stayed in Rome, so I returned by train. From Rome I went along the coast to Genoa and then up to Milan. The coast of the Mediterranean near Genoa is gorgeous, bold and rocky, much as the Maine coast, and the Mediterranean is the most wonderful blue. The railroad chases along the shore and in many places goes through short tunnels cut through the rocky noses which jut out into the sea. One gets an intermittent view of a fascinating bit of country with white houses sprinkled among green trees, an occasional castle or an old fortress, a rocky point—all footed by the blue Mediterranean. . . .

"In Vienna I visited two laboratories, one hydraulic, and a naval towing tank. In Prague I saw a dandy new laboratory, and then back to Berlin and Dresden. . . . Now I'm trying to turn out some work and make plans for my return trip.

I've put in an application for a Russian visa. If I get it, I shall go into Russia about September, visit several laboratories, cross Siberia, and take in the World Engineering Congress in Tokio and then head home via the Pacific. . . ." — LEROY G. MILLER, *Secretary*, 320 Nichols Avenue, Syracuse, N. Y.

COURSE V

There are two reasons why nothing has appeared in this section for some time, one is that I am lazy and the other is that correspondence has notably declined. Joe Brady continues with the Boston Woven Hose Company. Advancement has come slowly but surely in both greater opportunities and monetary reward. Some chemists make themselves increasingly valuable to their employers and Joe is one of them.

Joe Burk is also with his first post-graduate employer, the A. C. Lawrence Leather Company. — Stuart Bugbee, with a fiber company near Norristown, Penna., was married to Miss Edith Damon on October 26 in Buffalo, N. Y. I am sure we all extend to him our sincere congratulations and best wishes. — Roger MacArthur has progressed with his work at the University of Pittsburgh and expects to complete the necessary work for a Master's degree some time in 1929.

George Standley is carrying on his Doctor's thesis at the Institute under the direction of Professor Norris. George is as yet unmarried and not even engaged, much to my surprise. He extends an invitation to the fellows to drop into Room 4-435 to see him when they are in the vicinity.

I resigned from the United States Tariff Commission after being in Washington, D. C., for nine months. Since June 1, I have been in the Wilmington office of the du Pont Ammonia Corporation. The type of work I am doing may best be termed commercial research and is very interesting. — EDWARD T. DUNN, *Secretary*, 2014 Baynard Boulevard, Wilmington, Del.

1928

Word has recently been received from the Harvard Business School that Bill Kirk I and Bob Wise VI have been elected to the Review Board, which means that both Bill and Bob are scholastically rated among the first twenty members of their class. Considering the size and caliber of the Harvard Business School the distinction of being selected for the Review Board is a coveted honor, desired by all but received by only a few. Congratulations, Bill and Bob! Keep up the good work.

Carl Loeb, Jr., III, who is now working for the Anaconda Copper Company in Butte, Mont., won the championship of the Montana State Golf Tourney during the month of July. Carl was the sensation of the tournament and his score of 69 broke all previous tournament records in that state.

If you fellows will sit down and drop a line to your Course Secretary tonight, the '28 Notes will be much more inter-

esting in the succeeding issues of *The Review*. — GEORGE I. CHATFIELD, *General Secretary*, Room 11-203, M. I. T., Cambridge, Mass.

COURSE I

First for the four letters left over from last month. Hough's letter was written on May 28. It reached me exactly three months later after doing some high class traveling. Benny writes: "My last word to you was that I was leaving home and Mother to work for the United Fruit Company in Guatemala. I carried out this plan, but when I got down here I found that I was to work on the West Coast where the company operates under the pseudonym of the Cia. Agricola de Guatemala. I have been here some eight months now and am beginning to wonder why I came. My experiences are not typical examples of an engineer's work with the company because this West Coast is an entirely new field and the comforts and conveniences of a fully organized and running division are as yet entirely lacking. As a result I have to live in native huts now and then and get along on pretty crude food most of the time. I can't say much for the working conditions either. In the wet season it is necessary to be an amphibious sort of creature and spend a good part of your time under water, at least to the waist. At this time one is liable to be bothered by mosquitoes. I'll never kick about mosquitos down on the Cape after this. Sometimes they are so thick here that it is impossible to see through the gun, and this variety of insect is so big that I have seen three of them get hold of a small pig and carry him off bodily. In the dry season things are but slightly better for then one has to combat ticks. You have undoubtedly come across ticks before, but never such as those that infest the woods and bush of Guatemala. I suppose you didn't believe what I said about mosquitos, so I'll have to be careful in describing ticks. As to sizes, we have all varieties, from little seed ticks to the kind that are so big that when a half a dozen get on a mule's head he has to walk backwards and look through his legs to see where he is going. Although the creatures enjoy mule meat, they positively dote on white men, and I don't exaggerate a bit when I say they become very much attached to one."

The following paragraph will be just about a year late. "I meant to acknowledge some time ago several Christmas cards that reached me from Cy Meagher, Bill Kirk, Ed Holmes, and others. I didn't know their addresses though, so I let it slide. If any of the above-mentioned gentlemen read this masterpiece I hope they will excuse me for not writing sooner and will accept my most hearty thanks for their remembrance of me. I may be home before another year has gone and I hope that when I get there we can get a few of the crowd together for a good old game of 'Down the River.'"

I have some more recent news of Kent in a letter written to Hal Porter on September 1. During the summer Kent had

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the doubtful pleasure of a month in the hospital with an attack of jaundice. The hospital is in Puerto Barrios, and while there he saw and had a long bull session with Norm Estes XI, also of the United Fruit outfit. Hough gets back to the States next April, and we hope he gets the game he is looking for. The following address should reach him: Cia. Agricola de Guatemala, Rio Bravo, Fiacca Tiquisate, Guatemala, C. A.

Al Daytz comes through with a bit of news very regularly. Back in July this came from 20 Dana Place, Roxbury. "I started work July 1 with the Boston and Maine Railroad as a designing draftsman, after working one solid year with the Phoenix Bridge Company as a detailer. Every time we get *The Review* I go through the '28 Class Notes as if I were preparing for an examination. I never read anything about Zavorisk, Switzer, Jonesey, and a few others. What are they doing, making secret preparations for an endurance flight?"

We can now account for the Jones's part of Al's query, but the others are still in the limbo of the unknown. Jones's letter from 7008 Chappel Avenue, Chicago, told the story of his first year's work in words and pictures. The latter prove the well-known hobby still to be very much in existence. Unfortunately we must confine ourselves to the words. "Here is my history since leaving school. I hung around Cambridge for a month and on July 3 a wedding occurred. The ceremony was held at her home in Allston. We started west that night in the flivver. We went by way of Niagara Falls and got some good pictures. We got to my folks' place outside of Chicago the following Monday. I was all set to get a job on the Illinois Waterway, but my political pull wasn't strong enough. Then the Calumet Harbor was to come through, but the so-called leading citizens of Chicago killed it. So no job for a young hydraulic engineer. On August 3 I got a job with McClintic-Marshall Company, making shop details from the engineer's design drawings. The job was the Chicago Civic Opera House. I detailed steel from the fourth to the fortieth floors. There were eighty-five draftsmen working there and when the job was done they laid off nearly the whole force. I was let out on November 3.

"November 7 I went to work for a consulting engineer downtown. I did about everything there was to be done. I traced, designed, wrote legal descriptions, read proof, estimated quantities, checked drawings, and approved details submitted by the contractors. My biggest job there was on the new Highland Park Illinois Water filtration plant. I approved all the structural and reinforcing steel. This station has an elevated tank with a half million gallons capacity. The design was submitted by the Chicago Bridge and Iron Works. They guarantee their tanks to stand up but they don't guarantee the footings. So I had to do the design of all the steel in the footings. If that tank falls down you'll hear from me from South America."

Jones quit this job on May 15 and "On May 16 I went to work for the Sinclair Refining Company in East Chicago, Ind. The work is the most interesting I've had. The first week I spent on odd jobs getting settled. Then I spent a couple of weeks on piping work because the mechanical engineers were slow and behind. Then I went to checking the designs of small houses and of walkways. I did so well on that work they put me in a squad that is designing a new boiler house. I am the only one in the squad that has had less than five years of experience. The instructions I received from Spofford, Sutherland, and Terzaghi are showing up better than those given at Purdue, Michigan, and Illinois.

"Married life has been the berries. I've had my ball and chain over a year now and never a cross word. We have a small apartment on the South Side. The little kitchen makes a good dark room and the little wife makes a good assistant, only the latter makes me clean up the former when I am done. My wife is a little homesick for Boston and so am I, so you may see us pull in there in the flivver next year."

Cook is now finishing up his eighteen months contract with the Lago Petroleum Corporation in Venezuela. January will probably find him back in this country to stay. Here are a few excerpts from Bob's letters. "Chuck Topping is now in the main office as cost engineer and has a rather responsible job. I think his new position is quite a promotion and is giving him excellent experience in the keeping of engineering costs. For extra-curricular work I have been taking frequent week-end trips up and down the lake and into the interior. It is very interesting to set out in our launch early in the morning, with plenty of lunches and sometimes real beer on ice, headed for parts unknown. We puff along near the coast and if we sight a village we head for it and disembark. These villages are very interesting and make excellent subjects for photographs. We then hunt up a sandy beach and swim for the rest of the day. That is one of the advantages of the climate, excellent swimming and tennis all the year around. Technology is still contributing men to the Lago Petroleum Company in Venezuela. Harold Brown XV and Ivan Sweeney III are the most recent additions. We shall have to start a Technology Club of Venezuela. I am too far away from Caracas to look up Disario and Contreras but I shall try to stop there on my way back."

News that has accumulated in the past month hasn't yet been touched upon, but *The Review* Editors are liable to fire me if I try to take too much space, so I'll hold the latest news for a month. — GEORGE P. PALO, *Secretary*, 143 East 39th Street, New York, N. Y.

COURSE VI

It's quite some time since any Course VI news graced the columns of *The Review*, and what's more, it's quite some time and then some since any Course VI men have considered it worth while to

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inform your Secretary of their whereabouts and doings. What do you say, fellows? How's to loosen up with a little news so we'll have an idea of the rapidity with which you are climbing the ladder of fame and fortune? I'd appreciate it a whole lot personally, and I'm sure all the fellows are keenly interested in hearing from you.

Last June John Russell received his Master's degree. Congratulations, Johnny! It looks as if John were going to be our outstanding representative among the pedagogues. He is now a full-time instructor at the Institute we understand, and is to continue his studies, this time in quest of his Ph.D. So we will probably see his name enrolled with those of the great in engineering education some day.

Vic Decorte also received his Master's degree last June and is now working for the International Telephone and Telegraph Company in New York. — We had a newsy and extended letter from Johnny Metcalf a few months ago. Met has been working in the New York office of the Liberty Mutual Insurance Company as a safety engineer and he is living on East 40th Street, near the Grand Central. His work appears to be interesting and varied, although apparently he considers it more or less of a stepping stone to something better. Met says that Rumrill spent some time in their Lynn plant at first and was later transferred to Fort Wayne. He seems to like his work but would give a whole lot for a glimpse of the old Atlantic again.

We are also informed by Johnny Metcalf that Les Fox, the gentleman from Dixie, has taken unto himself a wife. News from Les himself is noticeable by its absence but we take this opportunity to wish the happy pair the greatest good fortune. Les also spent the past year at the Institute working for his M.S.

It is our understanding that Red Walsh and Bardwell, both of whom are working for the Mohawk Hudson Power Company in Albany and Schenectady, have been making trips in the general neighborhood of Northampton. Be careful, fellows, we have it on good authority that such doings are bad for the heart. — Jim Cullen writes to say that he has forsaken the New York Edison Company and has cast his lot with the Postal Telegraph Company, for better or for worse. Jim is being exposed to an apprentice engineer course with the Postal, at the completion of which he is to be placed in the engineering office.

Bob Mercer and myself have been transferred to the East. Bob is now in the New York sales office of the Electric Machinery Manufacturing Company. Your Secretary is now working in the Boston office of the same company. — PETER H. KIRWIN, *Secretary*, 7 Grosvenor Place, Boston, Mass.

COURSE XIV

Two of our Class received their Master's degrees last June, Basilio and Kessler. Joe Collins was graduated with a Bachelor's degree, and he is to be congratulated for being able to carry on

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under such adverse circumstances. It was reported that Basilio has secured a position with the Union Carbide Company, while Kessler has gone to Flint, Mich., with the A. C. Spark Plug Company. Joe Collins was employed by an electric condenser concern in Quincy, Mass.

While home on my vacation I met Bob Canning. He was attending the summer session at the Institute and expected to complete his work by next February. From Bob I learned that Lew O'Malley was vacationing in Mexico. I had the good fortune to find jolly little Jimmie Mitchell in Lawrence, Mass. He is a chemist in the bleachery of the Pacific Mills. He lives at home, 38 Iroquois Street, Roxbury, Mass. Jimmie will be pleased to hear from the fellows and has promised to write to them.

I was in Wilmington, Del., a short while ago and dropped in to see Emerson. He is doing some commercial research for the du Pont Ammonia Corporation and likes his job very well. He is evidently enjoying life for he speaks of golf on the hill and canoeing on Brandywine Creek. Chism has organized several new heating concerns on the Pacific Coast and is now President of the Pacific Electric Heating Corporation of Los Angeles. He also has offices in San Francisco and Portland, Ore. — CHARLES E. BERRY, *Secretary*, 7046 Wheeler Street, Philadelphia, Penna.

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To date only one of the Course Secretaries has been communicative about himself, his job and the other men in his Course with whom he has managed to come in contact. Let's get out and promote a little more activity and spirit in each Course, Secretaries. Send in whatever you have, for we will all be glad to hear about it. Only through a good start this year can we make the Class of '29 a lasting organization in which every member will be interested. Make every effort to keep in communication with your men, Secretaries, and with the mutual response that should be drawn from your individual course, there should be enough material for everyone's reading. Just place the notes in an envelope and forward them to the General Secretary.

Judging from a letter recently received from Joel Whitney, the rest of Course II just missed the best job, the best climate and just about the best of every-

thing when they did not go to Nashville, Tenn. He is enjoying his work, in fact, he is enthusiastic about it, though he does have to work shifts which alternate from week to week. That's the life with du Pont. Jess Jessup, too, is about to do big things for du Pont; in fact he wrote me the other day to get him the best information available here in Akron on Goodyear Rubber transmission, conveyor and elevator belts. He is burning up things in Leominster so fast they decided to put another million dollar addition on the plant to give him more to do.

All of us here in Akron are really getting into the rubber industry now that our training course has terminated. Distributed through the different departments, we are out to make names for ourselves and try to do as well as the Technology men who have already climbed the ladder here. — EARL S. GLEN, *General Secretary*, 130 Summerfield Street, Fall River, Mass.

COURSE I

The boys have not been very communicative since June, but the Secretary has managed to pick up some news here and there.

Wes Walters was married on June 27 to Josephine P. McNight. This is without doubt the most important piece of news there is to offer at this time. We wish to congratulate, Wes, on being the first of the Course I boys to forsake single blessedness. He is at present working for the Bemis Brothers Bag Company in St. Louis.

Ted Malmstrom started work for Stone and Webster Company in Boston but ended in the wilds of Missouri. He is working on a big hydroelectric project on the Osage River near Bagnell, Mo. He expects to have to fight the flies out there for a couple of years, but is going to be able to show all the Missourians how before he leaves.

Larry Newman took it easy last summer, but went to work in September for the American Telephone Company and is at present located in New Haven, Conn. He took up golf during the summer, and as a result he is in great condition for digging post holes.

Fred Ricks, Hap Adkins, and the Secretary are in the United States Engineers Office at Louisville, Ky., working on lock and dam designs and flood control studies. They have been enjoying Kentucky hospitality in their off hours, and are of the opinion that Louisville

is a very good place to live. Fred and the Secretary put some money on the races one day, but decided when the dust cleared away that maybe the bank was the safest place for money after all.

Ted Appel is with the American Bridge Company in Trenton, N. J. Issy Winer and Fine are working in Pittsburg. The Secretary hopes that all of the boys will write and reveal their whereabouts before the next issue of *The Review*. — GORDON R. WILLIAMS, *Secretary*, 405 West Oak Street, Louisville, Ky.

COURSE XI

With only one letter being received by the Course XI correspondent, our batting average still flourishes at .333, which isn't so bad as averages go. John Henry Latham Giles (I'm not quite sure of the John, but the other three are all right) is the lucky man this trip and he says that there are worse jobs than assisting in inspecting bathing beaches in the summer time. Anyhow Hank's start in life is being made with the Sanitary Bureau of the State of Connecticut. The Bureau is reported to be infested with Technology men who are only too willing to assist new men in becoming acclimated to the life of Hartford. The principal recreations, besides inspecting bathing beaches, consist of golf, tennis, and baseball with bowling and basketball in the winter time. All letters of a social nature should be addressed to the Y. M. C. A., Hartford, Conn.

As for the correspondent, my principal pastime, also my work, for the summer has been to count rivets. I have been quite successful at it, having given my personal attention to 103,679 of these pieces of steel so far, with Indian Summer still left. These rivets have been a few of those driven by the Chicago Bridge and Iron Works in the erection of their oil storage tanks. We also build water towers. Besides being one of their chief rivet counters I have also been able to compute wages, carry water, do electric welding, and drive rivets. I'm beginning to feel like Sophie Tucker's handy man.

Well, how about hearing from you other two Course XI Alumni? I'll be at the above address until Christmas when Santa Claus is going to let me get out. You can always address me at Garrettsville, Ohio. That is my permanent home address. — LAWRENCE C. HAMLIN, *Secretary*, 133 Whitelaw Avenue, Wood River, Ill.

Technology Club of Florida

THE President of the Club, Dr. Horatio N. Parker '94, city bacteriologist, returned home recently bearing numerous and sundry honors from a group of public health sessions. He came out of the American Public Health Association sessions at Minneapolis, Minn., recently with the chairmanship of the food and drug division. En route home he stopped off in Memphis, Tenn.,

to attend the annual dairy council sessions and while there was elected as the Third Vice-President of the International Association of Dairy and Milk Inspectors, setting him in line for the presidency honors three years hence.

The Secretary called on Henry W. Dew '13 and found him cheerful and friendly. He is with the du Pont interests in Jacksonville, Fla. — MISS HENRIETTA C. DOZIER '99, *Secretary*, 321 Barnett Building, Jacksonville, Fla.

Montana Society of the M. I. T.

Following a rather dormant summer, during which a number of our members were away on their vacations and the rest of us stayed home and complained of the heat and lack of moisture, the Society came together to welcome Professor Charles E. Locke '96 and Mrs. Locke on September 19. Professor Locke spent the day visiting the various surface operations of the mining properties in

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Butte, being accompanied by Frederick C. Gilbert '98 of the Montana State School of Mines and several others on the teaching staff of that institution. He was granted all the courtesies that a visitor could ask for through the officials of the Anaconda Copper Mining Company, which include Frederick C. Jaccard '07. As Butte is mainly a mining center, Professor Locke visited about all the industrial plants in town except where they slaughter horses and send the meat to Europe.

Late in the afternoon he journeyed to Great Falls, where he was the guest of Albert E. Wiggin '07, who has recently been promoted to the office of metallurgical manager for all the Montana plants of the Anaconda Copper Mining Company. Although Professor Locke was in Great Falls only a short time, he was shown through the large plant of the Anaconda Company, including its copper and zinc refineries and wire drawing departments. Before leaving Great Falls he was tendered a luncheon by Mr. Wiggin and other Technology men.

On September 21 Professor Locke spent the entire day at the Washoe plant of the Anaconda Company, which is the largest in the world. There he met William C. Capron '92, William Wraith, Jr. '26, and Carl M. Loeb, Jr. '28. Mr. Loeb is a new member of the Society and he has already distinguished himself by winning the state golf championship held late in the summer at Anaconda.

Saturday night there was a big dinner at the New Finlen Hotel. Billy Creden '90 opened the feast with a toast to our guests, welcoming them to our city and state and wishing them a safe and pleasant journey to the World's Engineering Congress in Japan. Professor and Mrs. Locke were the orators of the evening. Professor Locke told us all about the new infirmary and the now very specialized courses at the Institute. He also gave a brief outline of what was being done in the new Guggenheim Aeronautical Laboratory. He concluded by speaking of Open House at Technology and the work of the Dormitory Committee. Mrs. Locke then showed her appreciation of the event by thanking every one and inviting them to call on her when they were in Boston.

Those present at the dinner were: William L. Creden '90 and his wife; William A. Kemper '04, Jesse L. Maury '25 and his wife; Frederick C. Jaccard '07 and his wife; Frederick C. Gilbert '98 and Mrs. Gilbert; Walter R. C. Russert '18 and Mrs. Russert; Louis A. Stadler '01 and his wife; Samuel Barker, Jr. '27 and his wife; Professor and Mrs. Locke; Carl J. Trauerman '07; and William S. Hutchinson, Jr. '29.

Following the dinner a business meeting was held. Creden took the chair and the first business was the expressions of sentiment of the various members over the loss of our founder and chief member, the late Charles W. Goodale '75, who was chairman of the Society since its inception. Uncle Charlie was a real friend to all of us. Proper resolutions on

his passing will be drafted by a committee consisting of George W. Craven '98, Frederick C. Jaccard '07, and the Secretary. A copy of the resolutions drafted by the Boston section of the American Institute of Mining and Metallurgical Engineers was read at the meeting. Albert E. Wiggin '07 was named as the unanimous choice of the Society to succeed Mr. Goodale as chairman. It was voted to solicit funds from all Montana club members for the Technology Athletic Association. George A. Packard '90 was unanimously elected to continue as our representative on the Alumni Council meetings. A short account of the dinner was broadcast over Station KGIR shortly after the meeting. — CARL J. TRAUERMAN '07, *Secretary*, 25 East Broadway, Butte, Mont.

The Technology Club of Rochester

The annual meeting of the Club was held at the Rush Reservoir, which is near Rochester, on the afternoon and evening of October 12. Following the ball game, which was won by the even classes, the feature event of the afternoon was an egg-catching contest, which was won by Hank Couch '20. There also were ball-throwing contests, a candle-blowing contest, and an apple-throwing contest.

The Club was particularly fortunate in having as its guest, for the afternoon and evening, thirteen graduate students from the Chemical Engineering Practice School in Lackawanna, as well as the director, Dr. Slottman, and his assistant, Mr. Hoag. These boys were the guests of Bausch and Lomb and the Eastman Kodak Company during the morning of October 12 and were taken to Rush in automobiles where they joined with the Club for the events of the afternoon and evening. A dinner of good old codfish and broiled chicken was served at six-thirty. Following a session of songs and stories, the prizes were distributed to the winners of the afternoon contests by President Eisenhart '07.

At the business meeting the following officers were elected for the year 1929-30: Gerould T. Lane '13, President; Thomas M. Taylor '22, First Vice-President; Dr. Cyril J. Staud '24, Second Vice-President; William W. Vicinus '23, Treasurer; Donald B. Kimball '20, Secretary; and Henry R. Couch '20 and Albert F. Sulzer '01, Executive Committee. — DONALD B. KIMBALL '20, *Secretary*, 60 Greenway Road Rochester, N. Y.

Washington Society of the M. I. T.

The 1928-29 season was closed with an outing at the Columbia Country Club at Chevy Chase, Md., on Monday, June 10. The facilities of the Club were made available to members of the Society and their guests during the afternoon and evening. A banquet was held in the evening, after which an address was made by Dr. Charles G. Abbot '94, Secretary of the Smithsonian Institution and a member of the Society.

Activities were largely suspended during the summer months, as every one who can get away usually leaves this

town for a part of the time at least. The Secretary missed his annual trip to Boston this summer for the first time in seven years, but that was not because of any arduous duties relating to his office.

The fall season was opened on Friday, October 18, with a luncheon at the University Club, the speaker being Commander William E. Parker '99, Chief of the Division of Hydrography and Topography of the United States Coast and Geodetic Survey. Commander Parker was a delegate from the United States to the International Hydrographic Bureau at Monaco last April. Those present at the luncheon included the President, Alfred E. Hanson '14, the Secretary, Commander Parker, Henry L. J. Warren, Secretary of the Class of '75, District Commissioner Proctor L. Dougherty '87, W. Malcolm Corse '99, Walter C. Dean '00, Charles H. Godbold '98, Amasa M. Holcombe '04, Joseph Y. Houghton '26, Harold B. Mayhew '00, Edward D. Merrill '09, Walter I. Swanton '93, Marion I. Walters '23, and Francis G. Wells '22.

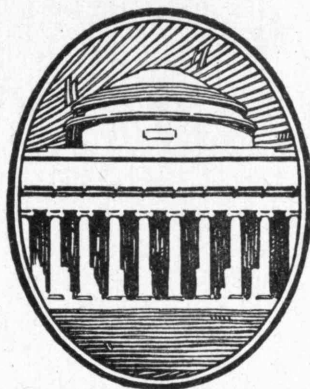
The speaker luncheons are a regular feature of the Society's activities, and will be held throughout the winter at the University Club at 12:30 P.M. on the third Friday of each month. Visiting Alumni are cordially invited to attend.

Dr. R. Wilfred Balcom '00, a member of the Society, died October 17. The following notice appeared in the *Washington Evening Star*: "Dr. R. Wilfred Balcom, fifty-two years old, principal chemist in charge of the food control division of the food, drugs and insecticide administration, United States Department of Agriculture, died of a cerebral hemorrhage at Georgetown University Hospital last night shortly after ten o'clock. . . ."

"Dr. Balcom was widely known as a scientific expert of the Department of Agriculture and had been active in many scientific and other organizations. He entered the government service in the Bureau of Chemistry and had risen through successive promotions to the position he held at the time of his death."

"A native of Nova Scotia, Dr. Balcom was graduated from the Institute in 1900. Subsequently he obtained a Ph.D. degree at the University of Heidelberg, Germany, and studied at Leipzig and Breslau. He taught at the Institute and later at the University of Michigan before entering the government service. Dr. Balcom was a member of the American Association for the Advancement of Science, the American Chemical Society, the Association of Official Agricultural Chemists, the Washington Academy of Sciences, the Sigma Xi Fraternity, the New England Historical and Genealogical Society, and the Montgomery County Civic Federation. He also belonged to the Masonic fraternity."

"He was married in 1911 to Nanita MacDonell. He is survived by his widow, two daughters, Margaret MacDonell Balcom and Harriet Webster Balcom, and a son, Robert Wilfred Balcom." — KENNETH P. ARMSTRONG '10, *Secretary*, 2002 Rhode Island Avenue, N. E., Washington, D. C.



INFORMATION

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The Institute publishes a variety of bulletins, fully descriptive of individual courses, as well as a catalogue of general information essential to the entering student. The Technology Review Bureau will be glad to send, gratis and post free upon request, one or more copies of any publication listed below, or to forward any special inquiry to the proper authority.

Ask for the following circulars by their descriptive letters:

AB: For general information, admission requirements, subjects of instruction, ask for Bulletin AB.

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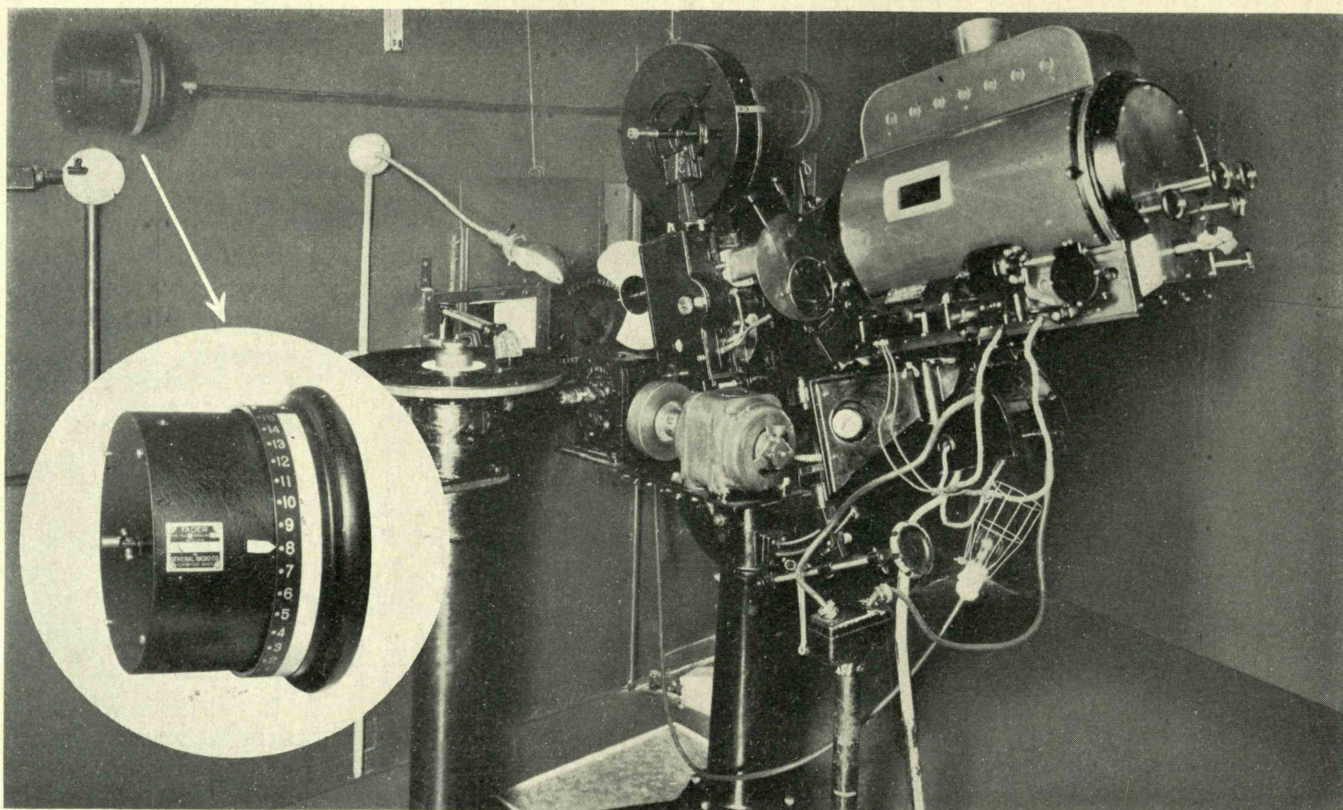
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